The Rockbox Manual
for
MPIO HD300

rockbox.org
March 5, 2013

Rockbox

http://www.rockbox.org/
Open Source Jukebox Firmware

Rockbox and this manual is the collaborative effort of the Rockbox team and its contributors. See the appendix for a complete list of contributors.

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Version 3.13. Built using pdfLaTeX.

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1. Introduction

1.1. Welcome

This is the manual for Rockbox. Rockbox is an open source firmware replacement for a growing number of digital audio players. Rockbox aims to be considerably more functional and efficient than your device's stock firmware while remaining easy to use and customisable. Rockbox is written by users, for users. Not only is it free to use, it is also released under the GNU General Public License (GPL), which means that it will always remain free both to use and to change.

Rockbox has been in development since 2001, and receives new features, tweaks and fixes each day to provide you with the best possible experience on your digital audio player. A major goal of Rockbox is to be simple and easy to use, yet remain very customisable and configurable. We believe that you should never need to go through a series of menus for an action you perform frequently. We also believe that you should be able to configure almost anything about Rockbox you could want, pertaining to functionality. Another top priority of Rockbox is audio playback quality – Rockbox, for most models, includes a wider range of sound settings than the device's original firmware. A lot of work has been put into making Rockbox sound the best it can, and improvements are constantly being made. All models have access to a large number of plugins, including many games, applications, and graphical "demos". You can load different configurations quickly for different purposes (e.g. a large font for in your car, different sound settings for at home). Rockbox features a very wide range of languages, and all supported models also have the ability to talk to you – menus can be voiced and filenames spelled out or spoken.

1.2. Getting more help

This manual is intended to be a comprehensive introduction to the Rockbox firmware. There is, however, more help available. The Rockbox website at http://www.rockbox.org/ contains very extensive documentation and guides written by members of the Rockbox community and this should be your first port of call when looking for further help.

If you cannot find the information you are searching for on the Rockbox website there are a number of support channels you should have a look at. You can try the Rockbox forums located at http://forums.rockbox.org/. The mailing lists are another option, and can be found at http://www.rockbox.org/mail/. From that page you can subscribe to the lists and browse the archives. To search the list archives simply use the search field that is located on the left side of the website. Furthermore, you can ask on IRC. The

main channel for Rockbox is `#rockbox` on irc://irc.freenode.net. Many helpful developers and users are usually around. Just join and ask your question (don't ask to ask!) – if someone knows the answer you'll usually get an answer pretty quickly. More information including IRC logs can be found at http://www.rockbox.org/irc/. We also have a web client so that you can join the Rockbox IRC channel without needing to install additional software onto your computer.

If you think you have found a bug please make sure it actually is a bug and is still present in the most recent version of Rockbox. You should try to confirm that by using the above mentioned support channels first. After that you can submit that issue to our tracker. Refer to section G (page 196) for details on how to use the tracker.

1.3. Naming conventions and marks

We have some conventions (especially for naming) that are intended to be consistent throughout this manual.

Manufacturer and product names are formatted in accordance with the standard rules of English grammar, e.g. "MPIO playback is currently unsupported". Manufacturer and model names are proper nouns, and thus are written beginning with a capital letter.

This manual has some parts that are marked with icons on the margin to help you finding important parts or parts you could skip. The following icons are used:

Note: This indicates a note. A note starts always with the text "Note". In order to make finding notes easier each one is accompanied by an icon in the margin as here. Notes are used to mark useful information that may help you to get the most out of Rockbox.

Warning: This is a warning. In contrast to notes mentioned above, a warning should be taken more seriously. Whereas ignoring notes will not cause any serious damage, ignoring warnings *could* cause serious damage to your player. You really should read the warnings, especially if you are new to Rockbox.

This icon marks a section that is intended especially for the blind and visually impaired. As they cannot read the manual in the same way sighted people do we have added some additional descriptions. If you are not blind or visually impaired you can probably completely skip these blocks. To make this easier, there is an icon shown in the margin on the right.

Links to the wiki are abbreviated by the name of the wiki page. Those names are still linked so you can simply follow them like any other link in this manual. If you want to access a wiki page manually go to ☞ http://www.rockbox.org/wiki/ and type the page name in the "Go" box at the top of the page. Links to wiki pages are also indicated by the symbol ☞ in front of the page name.

2. Installation

Installing Rockbox is generally a quick and easy procedure. However before beginning there are a few important things to know.

2.1. Before Starting

USB connection. To transfer Rockbox to your player you need to connect it to your computer. For manual installation/uninstallation, or should autodetection fail during automatic installation, you need to know where to access the player. On Windows this means you need to know the drive letter associated with the player. On Linux you need to know the mount point of your player. On Mac OS X you need to know the volume name of your player.

2.2. Installing Rockbox

There are two ways to install Rockbox: automated and manual. The automated way is the preferred method of installing Rockbox for the majority of people. Rockbox Utility is a graphical application that does almost everything for you. However, should you encounter a problem, then the manual way is still available to you.

There are two separate components which need to be installed in order to run Rockbox:

The Rockbox bootloader. The bootloader is the program that tells your player how to load and start other components of Rockbox and for providing the dual boot function. This is the component of Rockbox that is installed to the flash memory of your MPIO.

The Rockbox firmware. Unlike the MPIO firmware, which runs entirely from flash memory, most of the Rockbox code is contained in a "build" that resides on your player's drive. This makes it easy to update Rockbox. The build consists of a directory called `.rockbox` which contains all of the Rockbox files, and is located in the root of your player's drive.

Apart from the required parts there are some addons you might be interested in installing.

Fonts. Rockbox can load custom fonts. The fonts are distributed as a separate package and thus need to be installed separately. They are not required to run Rockbox itself but a lot of themes require the fonts package to be installed.

Themes. The appearance of Rockbox can be customised by themes. Depending on your taste you might want to install additional themes to change the look of Rockbox.

2.2.1. Automated Installation

To automatically install Rockbox, download the official installer and housekeeping tool Rockbox Utility. It allows you to:

- Automatically install all needed components for using Rockbox ("Minimal Installation").
- Automatically install all suggested components ("Complete Installation").
- Selectively install optional components.
- Install additional fonts and themes.
- Install voice files and generate talk clips.
- Uninstall all components you installed using Rockbox Utility.

Prebuilt binaries for Windows, Linux and Mac OS X are available at the ☞RockboxUtility wiki page.

When first starting Rockbox Utility run "Autodetect", found in the configuration dialog (File → Configure). Autodetection can detect most player types. If autodetection fails or is unable to detect the mountpoint, make sure to enter the correct values. The mountpoint indicates the location of the player in your filesystem. On Windows, this is the drive letter the player gets assigned, on other systems this is a path in the filesystem.

Rockbox Utility will ask you for a compatible copy of the original firmware. This is because for legal reasons we cannot distribute the bootloader directly. Instead, we have to patch the MPIO firmware with the Rockbox bootloader.

Download a supported version of the MPIO firmware for your MPIO HD300 from the MPIO website, links can be found on ☞MPIOHD300Port.

Warning: The only tested version of the original firmware is 1.30.06 and as such is the only supported version

If the file that you downloaded is a `.zip` file, use an unzip utility like mentioned in the prerequisites section to extract the `.SYS` from the `.zip` file to your desktop. Likewise, if the file that you downloaded is an `.exe` file, double-click on the `.exe` file to extract the `.SYS` file to your desktop. When running Linux you should be able to extract `.exe` files using `unzip`.

Choosing a Rockbox version

There are three different versions of Rockbox available from the Rockbox website: Release version, current build and archived daily build. You need to decide which one you

want to install and get the appropriate version for your player. If you select either "Minimal Installation" or "Complete Installation" from the "Quick Start" tab, then Rockbox Utility will automatically install the release version of Rockbox. Using the "Installation" tab will allow you to select which version you wish to install.

Release. The release version is the latest stable release, free of known critical bugs. For a manual install, the current stable release of Rockbox is available at http://www.rockbox.org/download/.

Development Build. The development build is built at each change to the Rockbox source code repository and represents the current state of Rockbox development. This means that the build could contain bugs but most of the time is safe to use. For a manual install, you can download the current build from http://build.rockbox.org/.

Archived Build. In addition to the release version and the current build, there is also an archive of daily builds available for download. These are built once a day from the latest source code in the repository. For a manual install, you can download archived builds from http://www.rockbox.org/daily.shtml.

Note: Because current and archived builds are development versions that change frequently, they may behave differently than described in this manual, or they may introduce new (and potentially annoying) bugs. Unless you wish to try the latest and greatest features at the price of possibly greater instability, or you wish to help with development, you should stick with the release.

Please now go to section 2.2.3 (page 16) to complete the installation procedure.

2.2.2. Manual Installation

The manual installation method is still available to you, should you need or desire it by following the instructions below. If you have used Rockbox Utility to install Rockbox, then you do not need to follow the next section and can skip straight to section 2.2.3 (page 16)

Installing the firmware

1. Download your chosen version of Rockbox from the links in the previous section.
2. Connect your player to the computer via USB as described in the manual that came with your player.
3. Take the `.zip` file that you downloaded and use the "Extract all" command of your unzip program to extract the files onto your player.

Note: The entire contents of the `.zip` file should be extracted directly to the root of your player's drive. Do not try to create a separate directory on your player for the Rockbox files! The `.zip` file already contains the internal structure that Rockbox needs.

If the contents of the `.zip` file are extracted correctly, you will have a directory called `.rockbox`, which contains all the files needed by Rockbox, in the main directory of your player's drive.

Installing the bootloader

Installing the bootloader is the trickiest part of the installation. As explained above, we cannot distribute the bootloader directly, and thus need to patch a compatible version of the MPIO firmware, which can be downloaded as described above.

1. Download official Rockbox bootloader for MPIO HD300 from http://download.rockbox.org/bootloader/mpio/hd300 and save it to your desktop. The archive contains three files: bootloader.mpio, bootloader.map and rockbox-info.txt. The first file is actual bootloader, two others can be used for debugging and are irrelevant for end user.
2. Download mkmpioboot utility from http://download.rockbox.org/bootloader/mpio/mkmpioboot
3. Process previously downloaded official firmware to include rockbox bootloader. Open terminal window and type the following command:

   Code
   ```
   mkmpioboot HD300_UPG.SYS bootloader.mpio HD300_UPG.rb
   ```

4. Copy `HD300_UPG.rb` to the SYSTEM folder of your player and rename back to `HD300_UPG.SYS`
5. Safe eject your player
6. Connect Wall charger and turn on the device. This should trigger firmware upgrade process which will install rockbox bootloader to the flash memory of the player.

2.2.3. Finishing the install

2.2.4. Enabling Speech Support (optional)

If you wish to use speech support you will also need a voice file. Voice files allow Rockbox to speak the user interface to you. Rockbox Utility can install an English voice file, or you can download it from http://www.rockbox.org/daily.shtml and unzip it to the root of your player. Rockbox Utility can also aid you in the creation of voice files with different voices or in other languages if you have a suitable speech engine installed on your computer. Voice menus are enabled by default and will come into effect after a

reboot. See section 8.10 (page 71) for details on voice settings. Rockbox Utility can also aid in the production of talk files, which allow Rockbox to speak file and folder names.

2.3. Running Rockbox

When you turn the unit on, Rockbox should load.

2.4. Updating Rockbox

Rockbox can be easily updated with Rockbox Utility. You can also update Rockbox manually – download a Rockbox build as detailed above, and unzip the build to the root directory of your player as in the manual installation stage. If your unzip program asks you whether to overwrite files, choose the "Yes to all" option. The new build will be installed over your current build.

The bootloader only changes rarely, and should not normally need to be updated.

Note: If you use Rockbox Utility be aware that it cannot detect manually installed components.

2.5. Uninstalling Rockbox

Note: The Rockbox bootloader allows you to choose between Rockbox and the original firmware. (See section 3.1.3 (page 20) for more information.)

2.5.1. Automatic Uninstallation

You can uninstall Rockbox automatically by using Rockbox Utility. If you installed Rockbox manually you can still use Rockbox Utility for uninstallation but will not be able to do this selectively.

2.5.2. Manual Uninstallation

If you wish to clean up your disk, you may also wish to delete the `.rockbox` directory and its contents. Turn the MPIO off. Turn the player back on and the original MPIO software will load.

2.6. Troubleshooting

"File Not Found" If you receive a "File Not Found" from the bootloader, then the bootloader cannot find the Rockbox firmware. This is usually a result of not

extracting the contents of the `.zip` file to the proper location, and should not happen when Rockbox has been installed with Rockbox Utility.

To fix this, either install Rockbox with the Rockbox Utility which will take care of this for you, or recheck the Manual Install section to see where the files need to be located.

3. Quick Start

3.1. Basic Overview

3.1.1. The player's controls

Throughout this manual, the buttons on the player are labelled according to the picture above. Whenever a button name is prefixed by "Long", a long press of approximately one second should be performed on that button. The buttons are described in detail in the following paragraph. Additional information for blind users is available on the Rockbox website at ☞BlindFAQ.

3.1.2. Turning the player on and off

To turn on and off your Rockbox enabled player use the following keys:

Key	Action
Long **Play**	Start Rockbox
Long **Play**	Shutdown Rockbox

On shutdown, Rockbox automatically saves its settings.

In the unlikely event of a software failure, a hardware reset can be performed by inserting a paperclip gently into the Reset hole.

3.1.3. Starting the original firmware

Rockbox has a dual-boot feature. To boot into the original firmware, when the player is turned off, press and hold the **Rec** button, and then press the **Play** button. This will bring you to the short menu where you can choose among: Boot Rockbox, Boot MPIO firmware and Shutdown. Select the option you need with **Rewind** and **Forward** and confirm with long **Play**.

3.1.4. Putting music on your player

With the player connected to the computer as an MSC/UMS device (like a USB Drive), music files can be put on the player via any standard file transfer method that you would use to copy files between drives (e.g. Drag-and-Drop). Files may be placed wherever you like on the player, but it is strongly suggested *NOT* to put them in the `/.rockbox` folder and instead put them in any other folder, e.g. `/`, `/music` or `/audio`. The default directory structure that is assumed by some parts of Rockbox (album art searching, and missing-tag fallback in some WPSes) uses the parent directory of a song as the Album name, and the parent directory of that folder as the Artist name. WPSes may display information incorrectly if your files are not properly tagged, and you have your music organized in a way different than they assume when attempting to guess the Artist and Album names from your filetree. See section C (page 171) for the requirements for Album Art to work properly. See section B.1 (page 165) for a list of supported audio formats.

3.1.5. The first contact

After you have first started the player, you'll be presented by the Main Menu. From this menu you can reach every function of Rockbox, for more information (see section 5.1 (page 38)). To browse the files on your player, select Files (see section 4.1 (page 22)), and to browse in a view that is based on the meta-data[1] of your audio files, select Database (see section 4.2 (page 26)).

3.1.6. Basic controls

When browsing files and moving through menus you usually get a list view presented. The navigation in these lists are usually the same and should be pretty intuitive. In the tree view use **Scroll Down** and **Scroll Up** to move around the selection. Use **Enter** to select an item. When browsing the file system selecting an audio file plays it. The view switches to the "While playing screen", usually abbreviated as "WPS" (see section 4.3

[1] ID3 Tags, Vorbis comments, etc.

(page 28). The dynamic playlist gets replaced with the contents of the current directory. This way you can easily treat directories as playlists. The created dynamic playlist can be extended or modified while playing. This is also known as "on-the-fly playlist". To go back to the File Browser stop the playback with the Long **Play** button or return to the file browser while keeping playback running using **Enter**. In list views you can go back one step with **Menu**.

3.1.7. Basic concepts

Playlists

Rockbox is playlist oriented. This means that every time you play an audio file, a so-called "dynamic playlist" is generated, unless you play a saved playlist. You can modify the dynamic playlist while playing and also save it to a file. If you do not want to use playlists you can simply play your files directory based. Playlists are covered in detail in section 4.4 (page 33).

Menu

From the menu you can customise Rockbox. Rockbox itself is very customisable. Also there are some special menus for quick access to frequently used functions.

Context Menu

Some views, especially the file browser and the WPS have a context menu. From the file browser this can be accessed with Long **Enter**. The contents of the context menu vary, depending on the situation it gets called. The context menu itself presents you with some operations you can perform with the currently highlighted file. In the file browser this is the file (or directory) that is highlighted by the cursor. From the WPS this is the currently playing file. Also there are some actions that do not apply to the current file but refer to the screen from which the context menu gets called. One example is the playback menu, which can be called using the context menu from within the WPS.

3.2. Customising Rockbox

Rockbox' User Interface can be customised using "Themes". Themes usually only affect the visual appearance, but an advanced user can create a theme that also changes various other settings like file view, LCD settings and all other settings that can be modified using `.cfg` files. This topic is discussed in more detail in section 13.3 (page 160). The Rockbox distribution comes with some themes that should look nice on your player.

Note: Some of the themes shipped with Rockbox need additional fonts from the fonts package, so make sure you installed them. Also, if you downloaded additional themes from the Internet make sure you have the needed fonts installed as otherwise the theme may not display properly.

4. Browsing and playing

4.1. File Browser

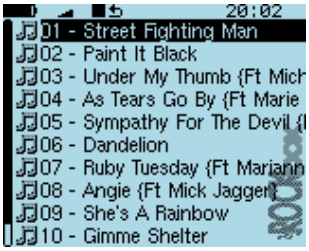

20:02
01 - Street Fighting Man
02 - Paint It Black
03 - Under My Thumb {Ft Mich
04 - As Tears Go By {Ft Marie
05 - Sympathy For The Devil {
06 - Dandelion
07 - Ruby Tuesday {Ft Mariann
08 - Angie {Ft Mick Jagger}
09 - She's A Rainbow
10 - Gimme Shelter

Figure 4.1.: The file browser

Rockbox lets you browse your music in either of two ways. The File Browser lets you navigate through the files and directories on your player, entering directories and executing the default action on each file. To help differentiate files, each file format is displayed with an icon.

The Database Browser, on the other hand, allows you to navigate through the music on your player using categories like album, artist, genre, etc.

You can select whether to browse using the File Browser or the Database Browser by selecting either Files or Database in the Main Menu. If you choose the File Browser, the Show Files setting lets you select what types of files you wish to view. See section 8.2 (page 62) for more information on the Show Files setting.

Note: The File Browser allows you to manipulate your files in ways that are not available within the Database Browser. Read more about Database in section 4.2 (page 26). The remainder of this section deals with the File Browser.

4.1.1. File Browser Controls

Key	Action
Scroll Up/Scroll Down	Go to previous/next item in list. If you are on the first/last entry, the cursor will wrap to the last/first entry.
Menu	Go to the parent directory.
Enter	Execute the default action on the selected file or enter a directory.
Play	If there is an audio file playing, return to the While Playing Screen (WPS) without stopping playback.
Long **Play**	Stop audio playback.
Long **Enter**	Enter the Context Menu.
Long **Menu**	Enter the Main Menu.

4.1.2. Context Menu

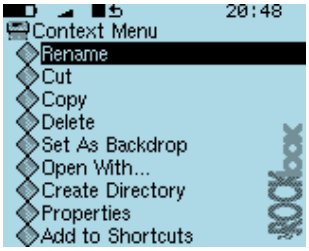


Figure 4.2.: The Context Menu

The Context Menu allows you to perform certain operations on files or directories. To access the Context Menu, position the selector over a file or directory and access the context menu with Long **Enter**.

Note: The Context Menu is a context sensitive menu. If the Context Menu is invoked on a file, it will display options available for files. If the Context Menu is invoked on a directory, it will display options for directories.

The Context Menu contains the following options (unless otherwise noted, each option pertains both to files and directories):

Playlist. Enters the Playlist Submenu (see section 4.4.3 (page 35)).

Playlist Catalogue. Enters the Playlist Catalogue Submenu (see section 4.4.2 (page 34)).

Rename. This function lets the user modify the name of a file or directory.

Cut. Copies the name of the currently selected file or directory to the clipboard and marks it to be 'cut'.

Copy. Copies the name of the currently selected file or directory to the clipboard and marks it to be 'copied'.

Paste. Only visible if a file or directory name is on the clipboard. When selected it will move or copy the clipboard to the current directory.

Delete. Deletes the currently selected file. This option applies only to files, and not to directories. Rockbox will ask for confirmation before deleting a file. Press **Enter**or **Play** to confirm deletion or any other key to cancel.

Delete Directory. Deletes the currently selected directory and all of the files and subdirectories it may contain. Deleted directories cannot be recovered. Use this feature with caution!

Set As Backdrop. Set the selected `bmp` file as background image. The bitmaps need to meet the conditions explained in section 13.1.5 (page 153).

Open with. Runs a viewer plugin on the file. Normally, when a file is selected in Rockbox, Rockbox automatically detects the file type and runs the appropriate plugin. The Open With function can be used to override the default action and select a viewer by hand. For example, this function can be used to view a text file even if the file has a non-standard extension (i.e., the file has an extension of something other than `.txt`). See section 12.3 (page 119) for more details on viewers.

Create Directory. Create a new directory in the current directory on the disk.

Properties. Shows properties such as size and the time and date of the last modification for the selected file. If used on a directory, the number of files and subdirectories will be shown, as well as the total size.

Set As Recording Directory. Save recordings in the selected directory.

Start File Browser Here. This option allows users to set the currently selected directory as the default start directory for the file browser. This option is not available for files.

Note: If you have Auto-Change Directory and Constrain Auto-Change enabled, the directories returned will be constrained to the directory you have chosen here and those below it. See section 7.12 (page 58)

Add to Shortcuts. Adds a link to the selected item in the `shortcuts.link` file. If the file does not already exist it will be created in the root directory. Note that if you create a shortcut to a file, Rockbox will not open it upon selecting, but simply bring you to its location in the File Browser.

4.1.3. Virtual Keyboard

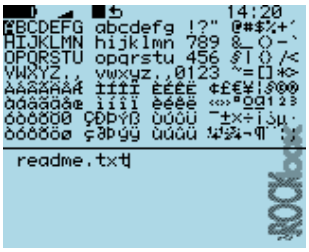


Figure 4.3.: The virtual keyboard

This is the virtual keyboard that is used when entering text in Rockbox, for example when renaming a file or creating a new directory. The virtual keyboard can be easily changed by making a text file with the required layout. More information on how to achieve this can be found on the Rockbox website at ☞LoadableKeyboardLayouts.

Note: When the cursor is on the input line, **Enter** deletes the preceding character

Key	Action
Rewind / **Forward**	Move the cursor on the virtual keyboard. If you move out of the picker area, you get the previous/next page of characters (if there is more than one).
Scroll Up / **Scroll Down**	Move the cursor on the virtual keyboard. If you move out of the picker area you get to the line edit mode.
Long **Play**	Flip to the next page of characters (if there is more than one).
Enter	Insert the selected keyboard letter at the current line cursor position.
Play	Exit the virtual keyboard and save any changes.
Menu	Exit the virtual keyboard without saving any changes.

4.2. Database

4.2.1. Introduction

This chapter describes the Rockbox music database system. Using the information contained in the tags (ID3v1, ID3v2, Vorbis Comments, Apev2, etc.) in your audio files, Rockbox builds and maintains a database of the music files on your player and allows you to browse them by Artist, Album, Genre, Song Name, etc. The criteria the database uses to sort the songs can be completely customised. More information on how to achieve this can be found on the Rockbox website at ☞DataBase.

4.2.2. Initializing the Database

The first time you use the database, Rockbox will scan your disk for audio files. This can take quite a while depending on the number of files on your player. This scan happens in the background, so you can choose to return to the Main Menu and continue to listen to music. If you shut down your player, the scan will continue next time you turn it on. After the scan is finished you may be prompted to restart your player before you can use the database.

Ignoring Directories During Database Initialization

You may have directories on your player whose contents should not be added to the database. Placing a file named `database.ignore` in a directory will exclude the files in that directory and all its subdirectories from scanning their tags and adding them to the database. This will speed up the database initialization.

If a subdirectory of an 'ignored' directory should still be scanned, place a file named `database.unignore` in it. The files in that directory and its subdirectories will be scanned and added to the database.

4.2.3. The Database Menu

Load To RAM The database can either be kept on hard disk (to save memory), or loaded into RAM (for fast browsing). Setting this to Yes loads the database to RAM, allowing faster browsing and searching. Setting this option to No keeps the database on the hard disk, meaning slower browsing but it does not use extra RAM and saves some battery on boot up.

Note: If you browse your music frequently using the database, you should load to RAM, as this will reduce the overall battery consumption because the disk will not need to spin on each search.

Auto Update If Auto update is set to on, each time the player boots, the database will automatically be updated.

Initialize Now You can force Rockbox to rescan your disk for tagged files by using the Initialize Now function in the Database Menu.

Warning: Initialize Now removes all database files (removing runtimedb data also) and rebuilds the database from scratch.

Update Now Update now causes the database to detect new and deleted files

Note: Unlike the Auto Update function, Update Now will update the database regardless of whether the Directory Cache is enabled. Thus, an update using Update now may take a long time.

Unlike Initialize Now, the Update Now function does not remove runtime database information.

Gather Runtime Data When enabled, rockbox will record how often and how long a track is being played, when it was last played and its rating. This information can be displayed in the WPS and is used in the database browser to, for example, show the most played, unplayed and most recently played tracks.

Export Modifications This allows for the runtime data to be exported to the file `/.rockbox/database_changelog.txt`, which backs up the runtime data in ASCII format. This is needed when database structures change, because new code cannot read old database code. But, all modifications exported to ASCII format should be readable by all database versions.

Import Modifications. Allows the `/.rockbox/database_changelog.txt` backup to be conveniently loaded into the database. If Auto Update is enabled this is performed automatically when the database is initialized.

4.2.4. Using the Database

Once the database has been initialized, you can browse your music by Artist, Album, Genre, Song Name, etc. To use the database, go to the Main Menu and select Database.

Note: You may need to increase the value of the Max files in dir browser setting (Settings → General Settings → System → Limits) in order to view long lists of tracks in the ID3 database browser.

There is no option to turn off database completely. If you do not want to use it just do not do the initial build of the database and do not load it to RAM.

Tag	Type	Origin
filename	string	system
album	string	id tag
albumartist	string	id tag
artist	string	id tag
comment	string	id tag
composer	string	id tag
genre	string	id tag
grouping	string	id tag
title	string	id tag
bitrate	numeric	id tag
discnum	numeric	id tag
year	numeric	id tag
tracknum	numeric	id tag/filename
autoscore	numeric	runtime db
lastplayed	numeric	runtime db
playcount	numeric	runtime db
Pm (play time - min)	numeric	runtime db
Ps (play time - sec)	numeric	runtime db
rating	numeric	runtime db
commitid	numeric	system
entryage	numeric	system
length	numeric	system
Lm (track len - min)	numeric	system
Ls (track len - sec)	numeric	system

4.3. While Playing Screen

The While Playing Screen (WPS) displays various pieces of information about the currently playing audio file. The appearance of the WPS can be configured using WPS configuration files. The items shown depend on your configuration – all items can be turned on or off independently. Refer to section D (page 173) for details on how to change the display of the WPS.

- Status bar: The Status bar shows Battery level, charger status, volume, play mode, repeat mode, shuffle mode and clock. In contrast to all other items, the status bar is always at the top of the screen.
- (Scrolling) path and filename of the current song.
- The ID3 track name.

- The ID3 album name.
- The ID3 artist name.
- Bit rate. VBR files display average bitrate and "(avg)"
- Elapsed and total time.
- A slidebar progress meter representing where in the song you are.
- Peak meter.

See section 13.2 (page 154) for details of customising your WPS (While Playing Screen).

4.3.1. WPS Key Controls

Key	Action
Scroll Up / **Scroll Down**	Volume up/down.
Rewind	Go to beginning of track, or if pressed while in the first seconds of a track, go to the previous track.
Long **Rewind**	Rewind in track.
Forward	Go to the next track.
Long **Forward**	Fast forward in track.
Play	Toggle play/pause.
Long **Play**	Stop playback.
Enter	Return to the File Browser / Database.
Long **Enter**	Enter WPS Context Menu.
Menu	Enter Main Menu.
Short **Forward** + Long **Forward**	Skip to the next directory.
Short **Rewind** + Long **Rewind**	Skip to the previous directory.

4.3.2. Peak Meter

The peak meter can be displayed on the While Playing Screen and consists of several indicators. For a picture of the peak meter, please see the While Recording Screen in section 5.8.1 (page 41).

The bar: This is the wide horizontal bar. It represents the current volume value.

The peak indicator: This is a little vertical line at the right end of the bar. It indicates the peak volume value that occurred recently.

The clip indicator: This is a little black block that is displayed at the very right of the scale when an overflow occurs. It usually does not show up during normal playback unless you play an audio file that is distorted heavily. If you encounter clipping while recording, your recording will sound distorted. You should lower the gain.

Note: Note that the clip detection is not very precise. Clipping might occur without being indicated.

The scale: Between the indicators of the right and left channel there are little dots. These dots represent important volume values. In linear mode each dot is a 10% mark. In dBFS mode the dots represent the following values (from right to left): 0 dB, -3 dB, -6 dB, -9 dB, -12 dB, -18 dB, -24 dB, -30 dB, -40 dB, -50 dB, -60 dB.

4.3.3. The WPS Context Menu

Like the context menu for the File Browser, the WPS Context Menu allows you quick access to some often used functions.

Playlist

The Playlist submenu allows you to view, save, search and reshuffle the current playlist. To change settings for the Playlist Viewer press Long **Enter** while viewing the current playlist to bring up the Playlist Viewer Menu. In this menu, you can find the Playlist Viewer Settings.

Playlist Viewer Settings

Show Icons. This toggles display of the icon for the currently selected playlist entry and the icon for moving a playlist entry

Show Indices. This toggles display of the line numbering for the playlist

Track Display. This toggles between filename only and full path for playlist entries

Save Current Playlist. Allows the current playlist to be saved as a `.m3u8` playlist file

Playlist catalogue

View catalogue. This lists all playlists that are part of the Playlist catalogue. You can load a new playlist directly from this list.

Add to playlist. Adds the currently playing file to a playlist. Select the playlist you want the file to be added to and it will get appended to that playlist.

Add to new playlist. Similar to the previous entry this will add the currently playing track to a playlist. You need to enter a name for the new playlist first.

Sound Settings

This is a shortcut to the Sound Settings Menu, where you can configure volume, bass, treble, and other settings affecting the sound of your music. See section 6 (page 47) for more information.

Playback Settings

This is a shortcut to the Playback Settings Menu, where you can configure shuffle, repeat, party mode, skip length and other settings affecting the playback of your music.

Rating

The menu entry is only shown if Gather Runtime Information is enabled. It allows the assignment of a personal rating value (0 – 10) to a track which can be displayed in the WPS and used in the Database browser. The value wraps at 10.

Bookmarks

This allows you to create a bookmark in the currently-playing track.

Show Track Info

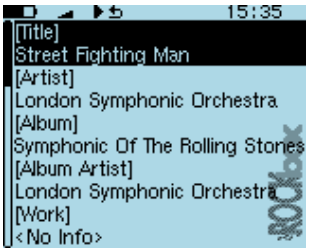


Figure 4.4.: The track info viewer

This screen is accessible from the WPS screen, and provides a detailed view of all the identity information about the current track. This info is known as meta data and is stored in audio file formats to keep information on artist, album etc. To access this screen, press Long **Enter** to access the WPS Context Menu and select Show Track Info.

Open With...

This Open With function is the same as the Open With function in the file browser's Context Menu.

Delete

Delete the currently playing file. The file will be deleted but the playback of the file will not stop immediately. Instead, the part of the file that has already been buffered (i.e. read into the player's memory) will be played. This may even be the whole track.

Pitch

The Pitch Screen allows you to change the rate of playback (i.e. the playback speed and at the same time the pitch) of your player. The rate value can be adjusted between 50% and 200%. 50% means half the normal playback speed and a pitch that is an octave lower than the normal pitch. 200% means double playback speed and a pitch that is an octave higher than the normal pitch.

The rate can be changed in two modes: procentual and semitone. Initially, procentual mode is active.

If you've enabled the Timestretch option in Sound Settings and have since rebooted, you can also use timestretch mode. This allows you to change the playback speed without affecting the pitch, and vice versa.

In timestretch mode there are separate displays for pitch and speed, and each can be altered independently. Due to the limitations of the algorithm, speed is limited to be between 35% and 250% of the current pitch value. Pitch must maintain the same ratio as well as remain between 50% and 200%.

The value of the rate, pitch and speed is not persistent, i.e. after the player is turned on it will always be set to 100%. However, the rate, pitch and speed information will be stored in any bookmarks you may create (see section 8.7 (page 69)) and will be restored upon playing back those bookmarks.

Key	Action
Play	Toggle pitch changing mode (cycle through all available modes).
Scroll Up / **Scroll Down**	Increase / Decrease pitch by 0.1% (in procentual mode) or 0.1 semitone (in semitone mode).
Long **Scroll Up** / Long **Scroll Down**	Increase / Decrease pitch by 1% (in procentual mode) or a semitone (in semitone mode).
Rewind / **Forward**	Temporarily change pitch by 2% (beatmatch), or modify speed (in timestretch mode).
Enter	Reset pitch and speed to 100%.
Menu	Leave the Pitch Screen.

4.4. Working with Playlists

4.4.1. Playlist terminology

Some common terms that are used in Rockbox when referring to playlists:

Directory. A playlist! One of the keys to getting the most out of Rockbox is understanding that Rockbox *always* considers the song that it is playing to be part of a playlist, and in some situations, Rockbox will create a playlist automatically. For example, if you are playing the contents of a directory, Rockbox will automatically create a playlist containing all songs in it. This means that just about anything that is described in this chapter with respect to playlists also applies to directories.

Dynamic playlist. A dynamic playlist is a playlist that is created "On the fly." Any time you insert or queue tracks using the Playlist submenu (see section 4.4.3 (page 35)), you are creating (or adding to) a dynamic playlist.

Insert. In Rockbox, to Insert an item into a playlist means putting an item into a playlist and leaving it there, even after it is played. As you will see later in this chapter, Rockbox can Insert into a playlist in several places.

Queue. In Rockbox, to Queue a song means to put the song into a playlist and then to remove the song from the playlist once it has been played. The only difference between Insert and Queue is that the Queue option removes the song from the playlist once it has been played, and the Insert option does not.

4.4.2. Creating playlists

Rockbox can create playlists in four different ways.

By selecting ("playing") a song from the File Browser

Whenever a song is selected from the File Browser with **Enter**, Rockbox will automatically create a playlist containing all of the songs in that directory and start playback with the selected song.

Note: If you already have created a dynamic playlist, playing a new song will *erase* the current dynamic playlist and create a new one. If you want to add a song to the current playlist rather than erasing the current playlist, see the section below on how to add music to a playlist.

By using Insert and Queue functions

If playback is stopped, the Insert and Queue functions can be used as described in 4.4.3 to create a new playlist instead of adding to an existing one. This will *erase* any dynamic playlist.

By using the Playlist catalogue

The Playlist catalogue makes it possible to modify and create playlists that are not currently playing. To do this select Playlist catalogue in the Context Menu. There you will have two choices, Add to playlist adds the selected track or directory to an existing playlist and Add to a new playlist creates a new playlist containing the selected track or directory.

Note: All playlists in the Playlist catalogue are stored by default in the `/Playlists` directory in the root of your player's disk and playlists stored in other locations are not included in the catalogue. It is however possible to move existing playlists there (see section 4.1.2 (page 23)).

By using the Main Menu

To create a playlist containing all music on your player, you can use the Create Playlist command in the Playlists menu found in the Main Menu. The created playlist will be named `root.m3u8` and saved in the root of your player's disk.

4.4.3. Adding music to playlists

Adding music to a dynamic playlist

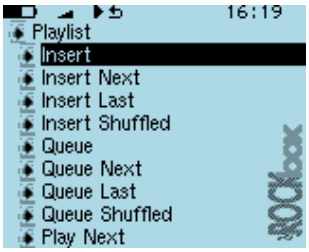


Figure 4.5.: The Playlist Submenu

The Playlist Submenu is a submenu in the Context Menu (see section 4.1.2 (page 23)), it allows you to put tracks into a "dynamic playlist". If there is no music currently playing, Rockbox will create a new dynamic playlist and put the selected track(s) into it. If there is music currently playing, Rockbox will put the selected track(s) into the current playlist. The place in which the newly selected tracks are added to the playlist is determined by the following options:

Insert. Add track(s) immediately after any tracks added via the most recent Insert operation. If no tracks have yet been added via an Insert, new tracks will be added immediately after the current playing track. If playback is stopped a new dynamic playlist will get created with the selected tracks.

Insert Next. Add track(s) immediately after current playing track, no matter what else has been inserted.

Insert Last. Add track(s) to end of playlist.

Insert Shuffled. Add track(s) to the playlist in a random order.

Insert Last Shuffled. Add tracks in a random order to the end of the playlist.

Queue. Queue is the same as Insert except queued tracks are deleted immediately from the playlist after they have been played. Also, queued tracks are not saved to the playlist file (see section 5.10 (page 43)).

Queue Next. Queue track(s) immediately after current playing track.

Queue Last. Queue track(s) at end of playlist.

Queue Shuffled. Queue track(s) in a random order.

Queue Last Shuffled. Queue tracks in a random order at the end of the playlist.

Play Next. Replaces all but the current playing track with track(s). Current playing track is queued.

The Playlist Submenu can be used to add either single tracks or entire directories to a playlist. If the Playlist Submenu is invoked on a single track, it will put only that track into the playlist. On the other hand, if the Playlist Submenu is invoked on a directory, Rockbox adds all of the tracks in that directory to the playlist.

Note: You can control whether or not Rockbox includes the contents of subdirectories when adding an entire directory to a playlist. Set the Settings → General Settings → Playlist → Recursively Insert Directories setting to Yes if you would like Rockbox to include tracks in subdirectories as well as tracks in the currently-selected directory.

Dynamic playlists are saved so resume will restore them exactly as they were before shutdown.

Note: To view, save or reshuffle the current dynamic playlist use the Playlist sub menu in the WPS context menu or in the Main Menu.

4.4.4. Modifying playlists

Reshuffling

Reshuffling the current playlist is easily done from the Playlist sub menu in the WPS, just select Reshuffle.

Moving and removing tracks

To move or remove a track from the current playlist enter the Playlist Viewer by selecting View Current Playlist in the Playlist submenu in the WPS context menu or the Main Menu. Once in the Playlist Viewer open the context menu on the track you want to move or remove. If you want to move the track, select Move in the context menu and then move the blinking cursor to the place where you want the track to be moved and confirm with **Enter**. To remove a track, simply select Remove in the context menu.

4.4.5. Saving playlists

To save the current playlist either enter the Playlist submenu in the WPS Context Menu (see section 4.3.3 (page 30)) and select Save Current Playlist or enter the Playlist Options menu in the Main Menu and select Save Current Playlist. Either method will bring you to the Virtual Keyboard (see section 4.1.3 (page 25)), enter a filename for your playlist and accept it and you are done.

4.4.6. Loading saved playlists

Through the File Browser

Playlist files, like regular music tracks, can be selected through the File Browser. When loading a playlist from disk it will replace the current dynamic playlist.

Through the Playlist catalogue

The Playlist catalogue offers a shortcut to all playlists in your player's specified playlist directory. It can be used like the File Browser.

5. The Main Menu

5.1. Introducing the Main Menu

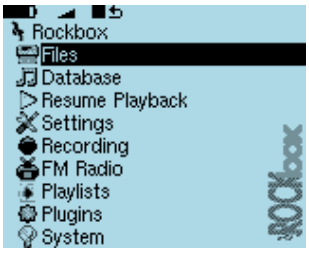


Figure 5.1.: The main menu

The Main Menu is the screen from which all of the Rockbox functions can be accessed. This is the first screen you will see when starting Rockbox. To return to the Main Menu, press the Long **Menu** button.

All settings are stored on the unit. However, Rockbox does not access the hard disk solely for the purpose of saving settings. Instead, Rockbox will save settings when it accesses the hard disk the next time, for example when refilling the music buffer or navigating through the File Browser. Changes to settings may therefore not be saved unless the player is shut down safely (see section 3.1.2 (page 19)).

5.2. Navigating the Main Menu

Key	Action
Scroll Down	Select the next option in the menu. Inside a setting, increase the value or choose next option.
Scroll Up	Select the previous option in the menu. Inside a setting,decrease the value or choose previous option.
Enter	Select option.
Menu	Exit menu or setting, or move to parent menu.

5.3. Recent Bookmarks

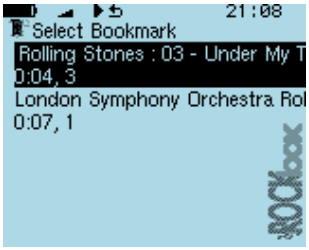


Figure 5.2.: The list bookmarks screen

If the Save a list of recently created bookmarks option is enabled then you can view a list of several recent bookmarks here and select one to jump straight to that track.

Note: Bookmarking only works when tracks are launched from the file browser, and does not currently work for tracks launched via the database. In addition, they do not currently work with dynamic playlists.

Key	Action
Scroll Down	Select the next bookmark.
Scroll Up	Select the previous bookmark.
Enter	Resume from the selected bookmark.
Menu	Exit Recent Bookmark menu.
Long **Rec**	Delete the currently selected bookmark.
Long **Enter**	Enter the context menu for the selected bookmark.

There are two options in the context menu:

Resume will commence playback of the currently selected bookmark entry.
Delete will remove the currently selected bookmark entry from the list.

This entry is not shown in the Main Menu when the option is off (the default setting). See section 8.7 (page 69) for more details on configuring bookmarking in Rockbox.

5.4. Files

Browse the files on your player (see section 4.1 (page 22)).

5.5. Database

Browse by the meta-data in your audio files (see section 4.2 (page 26)).

5.6. Now Playing/Resume Playback

Go to the While Playing Screen and resume if music playback is stopped or paused and there is something to resume (see section 4.3 (page 28)).

5.7. Settings

The Settings menu allows you to set or adjust many parameters that affect the way your player works. There are many submenus for different parameter areas. Every time you are setting a value of a parameter, and that value is selected from a list of some predefined available values, you can press Long **Enter**, and the selection cursor will jump to the default value for the parameter. You can then confirm or cancel the value. This is useful if you have changed the value of the parameter from the default to some other value and would like to restore the default value.

5.7.1. Sound Settings

The Sound Settings menu offers a selection of sound properties you may change to customise your listening experience. The details of this menu are covered in section 6 (page 47).

5.7.2. Playback Settings

The Playback Settings menu allows you to configure settings related to audio playback. The details of this menu are covered in section 7 (page 54).

5.7.3. General Settings

The General Settings menu allows you to customise the way Rockbox looks and the way it plays music. The details of this menu are covered in section 8 (page 61).

5.7.4. Theme Settings

The Theme Settings menu contains options that control the visual appearance of Rockbox. The details of this menu are covered in section 9 (page 74).

5.7.5. Recording Settings

The Recording Settings menu allows you to configure settings related to recording. The details of this menu are covered in detail in section 10 (page 76).

5.7.6. Manage Settings

The Manage Settings option allows the saving and re-loading of user configuration settings, browsing the hard drive for alternate firmwares, and finally resetting your player back to initial configuration. The details of this menu are covered in section 13.3 (page 160).

5.8. Recording

5.8.1. While Recording Screen

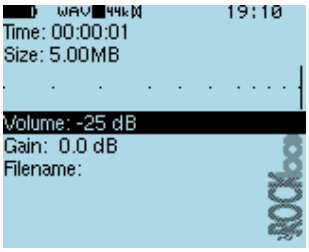


Figure 5.3.: The while recording screen

Selecting the Recording option in the Main Menu enters the Recording Screen, whilst pressing Long **Enter** enters the Recording Settings (see section 10 (page 76)). The Recording Screen shows the time elapsed and the size of the file being recorded. A peak meter is present to allow you set gain correctly. There is also a volume setting, this will only affect the output level of the player and does *not* affect the recorded sound. If enabled in the peak meter settings, a counter in front of the peak meters shows the number of times the clip indicator was activated during recording. The counter is reset to zero when starting a new recording.

Note: When you start a recording, the hard disk will spin up. This will cause the peak meters to freeze in the process. This is expected behaviour, and nothing to worry about. The recording continues during the spin up.

The frequency and channels settings are shown in the status bar.

The controls for this screen are:

Key	Action
Rewind / **Forward**	Select setting.
Scroll Down / **Scroll Up**	Adjust selected setting.
Play	Start recording. While recording: pause recording (press again to continue).
Menu	Exit Recording Screen. While recording: Stop recording.
Long **Enter**	Start recording. While recording: close the current file and open a new one.
Long **Menu**	Open Recording Settings (see section 10 (page 76)).

5.9. FM Radio

Figure 5.4.: The FM radio screen

This menu option switches to the radio screen. The FM radio has the ability to remember station frequency settings (presets). Since stations and their frequencies vary depending on location, it is possible to load these settings from a file. Such files should have the filename extension `.fmr` and reside in the directory `/.rockbox/fmpresets` (note that this directory does not exist after the initial Rockbox installation; you should create it manually). To load the settings, i.e. a set of FM stations, from a preset file, just "play" it from the file browser. Rockbox will "remember" and use it in PRESET mode until another file has been selected. Some preset files are available here: ☞FmPresets.

It is also possible to record the FM radio while listening. To start recording, enter the FM radio settings menu with Long **Enter** and then select Recording. At this point, you will be switched to the Recording Screen. Further information on Recording can be found in section 5.8 (page 41).

Key	Action
Rewind, **Forward**	Change frequency in SCAN mode or jump to next/previous station in PRESET mode.
Long **Rewind**, Long **Forward**	Seek to next station in SCAN mode.
Scroll Up, **Scroll Down**	Change volume.
Menu	Leave the radio screen with the radio playing.
Long **Menu**	Stop the radio and return to Main Menu.
Play	Mute radio playback.
Long **Play**	Switch between SCAN and PRESET mode.
Enter	Open a list of radio presets. You can view all the presets that you have, and switch to the station.
Long **Enter**	Display the FM radio settings menu.

Saving a preset: Up to 64 of your favourite stations can be saved as presets. Long **Enter** to go to the menu, then select Add preset. Enter the name (maximum number of characters is 32). Press **Play** to save.

Selecting a preset: **Enter** to go to the presets list. Use **Scroll Up** and **Scroll Down** to move the cursor and then press **Enter** to select. Use **Menu** to leave the preset list without selecting anything.

Removing a preset: **Enter** to go to the presets list. Use **Scroll Up** and **Scroll Down** to move the cursor and then press Long **Enter** on the preset that you wish to remove, then select Remove Preset.

Note: The radio will turn off when starting playback of an audio file.

5.10. Playlists

This menu allows you to work with playlists. Playlists can be created in three ways. Playing a file in a directory causes all the files in it to be placed in a playlist. Playlists can be created manually by either using the Context Menu (see section 4.1.2 (page 23)) or using the Playlist menu. Both automatically and manually created playlists can be edited using this menu.

Create Playlist: Rockbox will create a playlist with all tracks in the current directory and all sub-directories. The playlist will be created one directory level "up" from where you currently are.

View Current Playlist: Displays the contents of the playlist currently stored in memory.

Save Current Playlist: Saves the current dynamic playlist, excluding queued tracks, to the specified file. If no path is provided then playlist is saved to the current directory.

View Catalogue: Provides a simple interface to maintain several playlists (see section 4.4 (page 33)).

5.11. Plugins

With this option you can load and run various plugins that have been written for Rockbox. There are a wide variety of these supplied with Rockbox, including several games, some impressive demos and a number of utilities. A detailed description of the different plugins is to be found in section 12 (page 81).

5.12. System

Rockbox Info: Displays some basic system information. This is, from top to bottom, the amount of memory Rockbox has available for storing music (the buffer). The battery status. Hard disk size and the amount of free space on the disk.

Credits: Display the list of contributors.

Running Time: Shows the runtime of your player in hours, minutes and seconds.

Running Time: This item shows the cumulative overall runtime of your player since you either disconnected it from charging (in Rockbox) or manually reset this item. A manual reset is done through pressing any button, followed by pressing **Enter**.

Top Time: This item shows the cumulative overall runtime of your player since you last manually reset this item. A manual reset is done through pressing any button, followed by pressing **Enter**.

Debug (Keep Out!): This sub menu is intended to be used *only* by Rockbox developers. It shows hardware, disk, battery status and other technical information.

Warning: It is not recommended that users access this menu unless instructed to do so in the course of fixing a problem with Rockbox. If you think you have messed up your settings by use of this menu please try to reset *all* settings before asking for help.

5.13. Shortcuts

This menu item is a container for user defined shortcuts to files, folders or settings. With a shortcut,

- A file can be "run" (i.e. a music file played, plugin started or a `.cfg` loaded)
- The file browser can be opened with the cursor positioned at a specified file or folder
- A file's or folder's "Current Playlist" context menu item can be displayed
- A setting can be configured (any which can be added to the Quick Screen)
- A debug menu item can be displayed (useful for developers mostly)
- The current time can be spoken
- The sleep timer can be configured
- The player can be turned off

Note: Shortcuts into the database are not possible

Shortcuts are loaded from the file `/.rockbox/shortcuts.txt` which lists each item to be displayed. Each shortcut looks like the following:

Example

```
[shortcut]
type: <shortcut type>
data: <what the shortcut actually links to>
name: <what the shortcut should be displayed as>
icon: <number of the theme icon to use (see ☞CustomIcons)>
talkclip: <filename of a talk clip to speak when voice menus are enabled>
```

Only "type" and "data" are required (except if type is "separator" in which case "data" is also not required).

Available types are:

file `data` is the name of the file to "run"

browse `data` is the file or the folder to open the file browser at

playlist menu `data` is the file or the folder to open the "Current Playlist" context menu item on

setting `data` is the config name of the setting you want to change (see section E (page 190) for the list of the possible settings)

debug `data` is the name of the debug menu item to display

separator `data` is ignored; `name` can be used to display text, or left blank to make the list more accessible with visual gaps

time `data` needs to be either "talk" to talk the time, or "sleep X" where X is the number of minutes to run the sleep timer for (0 to disable). `name` is required for this shortcut type.

shutdown `data` is ignored; `name` can be used to display text

If the name/icon items are not specified, a sensible default will be used.

Note: For the "browse" type, if you want the file browser to start *inside* a folder, make sure the data has the trailing slash (i.e `/Music/` instead of `/Music`). Without the trailing slash, it will cause the file broser to open with `/Music` selected instead.

The file `shortcuts.txt` can be edited with any text editor. Most items can also be added to it through their context menu item "Add to shortcuts". A reboot is needed for manual changes to `shortcuts.txt` to be applied.

Shortcuts can be manually removed by selecting the one you wish to remove and pressing Long **Enter**.

6. Sound Settings

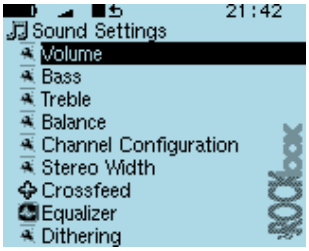


Figure 6.1.: The sound settings screen

The sound settings menu offers a selection of sound settings you may change to customise your listening experience.

6.1. Volume

This setting adjusts the volume of your music. Like most professional audio gear and many consumer audio products, Rockbox uses a decibel scale where 0 dB is a reference that indicates the maximum volume that the player can produce without possible distortion (clipping). All values lower than this reference will be negative and yield a progressively softer volume. Values higher than 0 dB are available and can be used to raise the volume more than would otherwise be possible. These volume levels will ordinarily lead to distorted sound, but might work nicely for music that has an otherwise low volume level. The volume can be adjusted from a

6.2. Bass

This setting emphasises or suppresses the lower (bass) frequencies in the sound. A value of 0 dB means that bass sounds are unaltered (flat response).

6.3. Treble

This setting emphasises or suppresses the higher (treble) frequencies in the sound. A value of 0 dB means that treble sounds are unaltered (flat response).

6.4. Balance

This setting controls the balance between the left and right channels. The default, 0, means that the left and right outputs are equal in volume. Negative numbers increase the volume of the left channel relative to the right, positive numbers increase the volume of the right channel relative to the left.

6.5. Channels

A stereo audio signal consists of two channels, left and right. The Channels setting determines if these channels are to be combined in any way, and if so, in what manner they will be combined. Available options are:

Stereo. Leave the audio signal unmodified.

Mono. Combine both channels and send the resulting signal to both stereo channels, resulting in a monophonic output.

Custom. Allows you to manually specify a stereo width with the Stereo Width setting described later in this chapter.

Mono Left. Plays the left channel in both stereo channels.

Mono Right. Plays the right channel in both stereo channels.

Karaoke. Removes all sound that is common to both channels. Since most music is recorded with vocals being equally present in both channels to make the singer sound centrally placed, this often (but not always) has the effect of removing the voice track from a song. This setting also very often has other undesirable effects on the sound.

6.6. Stereo Width

Stereo width allows you to manually specify the effect that is applied when the Channels setting is set to "custom". All values below 100% will progressively mix the contents of one channel into the other. This has the effect of gradually centering the stereo image, until you have monophonic sound at 0%. Values above 100% will progressively remove components in one channel that is also present in the other. This has the effect of widening the stereo field. A value of 100% will leave the stereo field unaltered.

6.7. Crossfeed

Crossfeed attempts to make the experience of listening to music on headphones more similar to listening to music with stereo speakers. When you listen to music through speakers, each ear will hear sound originating from both speakers. However, the sound

from the left speaker reaches your right ear slightly later than it does your left ear, and vice versa.

The human ear and brain together are very good at interpreting the time differences between direct sounds and reflected sounds and using that information to identify the direction that the sound is coming from. On the other hand, when listening to headphones, each ear hears only the stereo channel corresponding to it. The left ear hears only the left channel and the right ear hears only the right channel. The result is that sound from headphones does not provide the same spatial cues to your ear and brain as speakers, and might for that reason sound unnatural to some listeners.

The crossfeed function uses an algorithm to feed a delayed and filtered portion of the signal from the right channel into the left channel and vice versa in order to simulate the spatial cues that the ear and brain receive when listening to a set of loudspeakers placed in front of the listener. The result is a more natural stereo image that can be especially appreciated in older rock and jazz records, where one instrument is often hard-panned to just one of the speakers. Many people will find such records tiring to listen to using earphones and no crossfeed effect.

Crossfeed has the following settings:

Crossfeed. Selects whether the crossfeed effect is to be enabled or not.

Direct Gain. How much the level of the audio that travels the direct path from a speaker to the corresponding ear is supposed to be decreased.

Cross Gain. How much the level of the audio that travels the cross path from a speaker to the opposite ear is to be decreased.

High-Frequency Attenuation. How much the upper frequencies of the cross path audio will be dampened. Note that the total level of the higher frequencies will be a combination of both this setting and the Cross Gain setting.

High-Frequency Cutoff. Decides at which frequency the cross path audio will start to be cut by the amount described by the High-Frequency Attenuation setting.

Most users will find the default settings to yield satisfactory results, but for the more adventurous user the settings can be fine-tuned to provide a virtual speaker placement suited to ones preference. Beware that the crossfeed function is capable of making the audio distort if you choose settings which result in a too high output level.

6.8. Equalizer

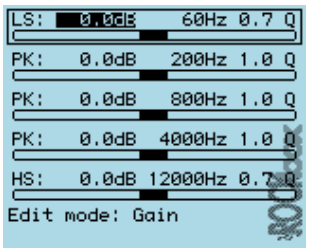


Figure 6.2.: The graphical equalizer

Rockbox features a parametric equalizer (EQ). As the name suggests, a parametric EQ lets you control several different parameters for each band of the EQ. In some ways the EQ is similar to the Bass and Treble settings described earlier, but the EQ allows you to control the sound much more carefully.

Rockbox's parametric EQ is composed of five different bands:

Band 0: Low shelf filter. The low shelf filter boosts or lowers all frequencies below a certain frequency limit, much as the "bass" control found on ordinary stereo systems does. Adjust the "cutoff" frequency parameter to decide where the shelving starts to take effect. For example, a cutoff frequency of 50 Hz will adjust only very low frequencies. A cutoff frequency of 200 Hz, on the other hand, will adjust a much wider range of bass frequencies. The "gain" parameter controls how much the loudness of the band is adjusted. Positive numbers make the EQ band louder, while negative numbers make that EQ band quieter. The "Q" parameter should always be set to 0.7 for the shelving filters. Higher values will add a small boost around the cutoff frequency that is almost always undesirable.

Bands 1-8: Peaking filters. Peaking EQ filters boost or lower a frequency range centered at the centre frequency chosen. Graphic equalizers in home stereos are usually peaking filters. The peaking filters in Rockbox's EQ lets you adjust three different parameters for EQ bands 1 through 3. The "centre" parameter controls the centre frequency of the frequency range that is affected as described above. The "gain" parameter controls how much each band is adjusted, and works as for the low shelf filter. Finally, the "Q" parameter controls how wide or narrow the affected frequency range is. Higher Q values will affect a narrower band of frequencies, while lower Q values will affect a wider band of frequencies.

Band 9: High shelf filter. A high shelf filter boosts or lowers all frequencies above a certain frequency limit, much as the "treble" control found on ordinary stereo systems does. The high shelf filter is adjusted the same way as the low shelf filter,

except that it works on the high end of the frequency spectrum rather than the low end.

As a general guide, EQ band 0 should be used for low frequencies, EQ bands 1 through 8 should be used for mids, and EQ band 9 should be used for highs.

Enable EQ. This option controls whether the EQ is on or off.

Graphical EQ. This option brings up a graphic EQ screen, which allows adjustment of each of the three parameters described above (gain, centre frequency, and Q) for each of the five EQ bands.

Key	Action
Scroll Up	Raises the highlighted parameter.
Scroll Down	Lowers the highlighted parameter.
Rewind	Moves to the previous EQ band.
Forward	Moves to the next EQ band.
Enter	Toggles the cursor among the three parameters (gain, centre frequency, Q) for the selected EQ band
Menu	Exits the graphic EQ screen.

Pre-cut. If too much positive gain is added through the graphical EQ, your music may distort. The Precut setting allows you to apply a global negative gain to decoded audio, cancelling out positive gain from the EQ. This will prevent distortion when boosting certain frequency ranges, at the expense of making audio quieter.

Alternatively, precut can be used with a flat EQ curve to implement a volume cap. For example, on a player that allows overdriving the headphone output to +6dB, maximum volume can be capped to +0dB by applying 6dB of precut. Note that precut is not applied if EQ is disabled.

Simple EQ. This option provides an easier alternative for those who are daunted by all of the parameters that can be adjusted using the graphical EQ. With the Simple EQ, the only parameter that can be adjusted is the gain.

Advanced EQ. This sub menu provides options for adjusting the same parameters as the Graphical EQ. The only difference is that the parameters are adjusted through textual menus rather than through a graphic interface.

Save EQ Preset. This option saves the current EQ configuration in a `.cfg` file.

Browse EQ Presets. This menu displays a list of EQ presets, as well as any EQ configurations saved using the Save EQ Preset option. Users unfamiliar with the operation of a parametric EQ may wish to use the presets instead of trying to configure the EQ, or use the presets for designing their own custom EQ settings.

6.9. Dithering

This setting controls the dithering and noise shaping functionality of Rockbox.

Most of Rockbox' audio file decoders work at a higher bit depth than the 16 bits used for output on the player's audio connectors. The simplest way to convert from one bit depth to another is simply discarding all the surplus bits. This is the default behaviour, and adds distortion to the signal that will vary in character along with the desired sound.

Dithering adds low-level noise to the signal prior to throwing away the surplus bits, which gives the resulting signal a uniform noise floor which is independent of the signal. Most people find this noise preferable to the time-varying noise heard when not performing dithering.

After dithering, noise shaping is performed. This basically just pushes the dithering noise to the parts of the frequency spectrum humans cannot hear so easily. In Rockbox' case, some of the noise is pushed up to above 10 kHz.

This setting will be put to its best use when listening to dynamic music with frequently occuring quiet parts, classical music being a typical example. It is worth noting that the effects of dithering and noise shaping are very subtle, and not easily noticable.

Rockbox uses highpass triangular distribution noise as the dithering noise source, and a third order noise shaper.

6.10. Timestretch

Enabling Timestretch allows you to change the playback speed without it affecting the pitch of the recording. After enabling this feature and rebooting, you can access this via the Pitch Screen. This function is intended for speech playback and may significantly dilute your listening experience with more complex audio. See section 4.3.3 (page 32) for more details about how to use the feature.

6.11. Compressor

The Compressor reduces, or compresses, the dynamic range of the audio signal. This makes the quieter and louder sections closer to the same volume level by progressively reducing the gain of louder signals. When subsequently amplified, this has the effect of making the quieter sections louder while keeping the louder sections from clipping. This allows listening to the quiet sections of dynamic material in noisy environments while preventing sudden loud sections from being overbearing.

There are several settings associated with the compressor. The first, and most important, is the Threshold. The threshold is the audio input level at which the compressor begins to act. Any level louder than the threshold will be compressed to some extent. The maximum amount of compression, or the quietest level at which the compressor will operate, is -24 dB. The default of Off disables the compressor.

The Makeup Gain setting has two options: Off and Auto. Off means that the compressed audio will not be amplified after compression. The default of Auto will

amplify the signal so that the loudest possible signal after compression will be just under the clipping limit. This is desirable because the compressed signal without makeup gain is quieter than the input signal. Makeup Gain in Auto restores the signal to the maximum possible level and brings the quieter audio up with it. This is what makes it possible to hear the quieter audio in noisy environments.

The Ratio setting determines how aggressively the compressor reduces gain above the threshold. For example, the 2:1 setting means that for each two decibels of input signal above the threshold, the compressor will only allow the output to appear as one decibel. The higher the ratio, the harder the signal is compressed. The ratio setting of Limit means essentially a ratio of infinity to one. In this case, the output signal is not allowed to exceed the threshold at all.

The Knee setting determines how abrupt the transition is from a non-compressed signal to a compressed signal. Hard Knee means that the transition occurs precisely at the threshold. The Soft Knee setting smoothes the transition from plus or minus three decibels around the threshold.

The Release Time setting sets the recovery time after the signal is compressed. Once the compressor determines that compression is necessary, the input signal is reduced appropriately, but the gain isn't allowed to immediately return to normal levels. This is necessary to reduce artifacts such as "pumping." Instead, the gain is allowed to return to normal at the chosen rate. Release Time is the time for the gain to recover by 10 dB.

7. Playback Settings

The Playback Settings menu allows you to configure settings related to audio playback.

7.1. Shuffle

Turning shuffle on will cause Rockbox to randomly re-order the playlist. Thus, to shuffle all of the audio files on the player, you first need to create a playlist containing all of them. For more information on creating playlists refer to section 4.4 (page 33).
Options: Yes/No.

7.2. Repeat

Configures settings related to repeating of directories or playlists.
Options: Off / All / One / Shuffle / A-B:

Off. The current playlist will not repeat when it is finished.

> **Note:** If you have the Auto-Change Directory option set to Yes, Rockbox will move on to the next directory on your hard drive. If the Auto-Change Directory option is set to No, playback will stop when the current directory or playlist is finished.

All. The current playlist will repeat when it is finished.

One. Repeat one track over and over.

Shuffle. When the current playlist has finished playing, it will be shuffled and then repeated.

A-B. Repeats between two user defined points within a track, typically used by musicians when attempting to learn a piece of music. This option is more complicated to use than the others as the player must first be placed into A-B repeat mode and then the start and end points defined.

7.3. Play Selected First

This setting controls what happens when you select a file for playback while shuffle mode is on. If the Play Selected First setting is Yes, the file you selected will be played first. If this setting is No, a random file in the directory will be played first.

7.4. Fast-Forward/Rewind

These settings control the speed and acceleration during fast forward and rewind. The setting FF/RW Min Step controls the initial speed and FF/RW Accel controls the acceleration.

7.5. Anti-Skip Buffer

This setting controls how early Rockbox starts refilling the music buffer from the hard drive when playing. A longer Anti-Skip Buffer helps prevent skips in music playback if Rockbox has trouble reading from the disk. This can happen if the player is knocked, shaken or jogged heavily while Rockbox is trying to read the hard drive.

The anti-skip buffer can be set to various values between 5 seconds and 10 minutes.

Note: Having a large anti-skip buffer tends to use more power, and may reduce your battery life. It is recommended to always use the lowest possible setting that allows correct and continuous playback.

7.6. Fade on Stop/Pause

Enables and disables a fade effect when you pause or stop playing a song. If the Fade on Stop/Pause option is set to Yes, your music will fade out when you stop or pause playback, and fade in when you resume playback.

7.7. Party Mode

Enables unstoppable music playback. When new songs are selected, they are queued at the end of the current dynamic playlist instead of being played immediately. Pausing and stopping playback is disabled as well as skipping songs and launching plugins.

7.8. Crossfade

This section controls the behavior of the crossfader. The crossfader, when enabled, smoothly fades one track into the next. This can occur in two situations: an automatic track change or a manual track skip. An automatic track change occurs at the end of

the track, moving to the next track in the playlist without user intervention. A manual track skip goes to the next track immediately when the appropriate button is pressed.

Options for crossfade settings are:

Enable Crossfade. If set to Off, crossfade is disabled and all track changes are gapless. If set to Automatic Track Change Only, crossfade occurs for automatic track changes, but not for manual track skips. The next setting, Manual Track Skip Only, is the opposite: tracks will only crossfade when manually skipped. If set to Shuffle, crossfade is enabled for all track changes, automatic or manual, when the shuffle feature is set to Yes, but disabled otherwise. If set to Shuffle or Manual Track Skip then crossfade will be active either when shuffle is set to Yes or the track is manually skipped. If set to Always, tracks will always crossfade into one another.

Fade In Delay. The "fade in delay" is the length of time between when the crossfade process begins and when the new track begins to fade in.

Fade In Duration. The length of time, in seconds, that it takes your music to fade in once the Fade In Delay has ended.

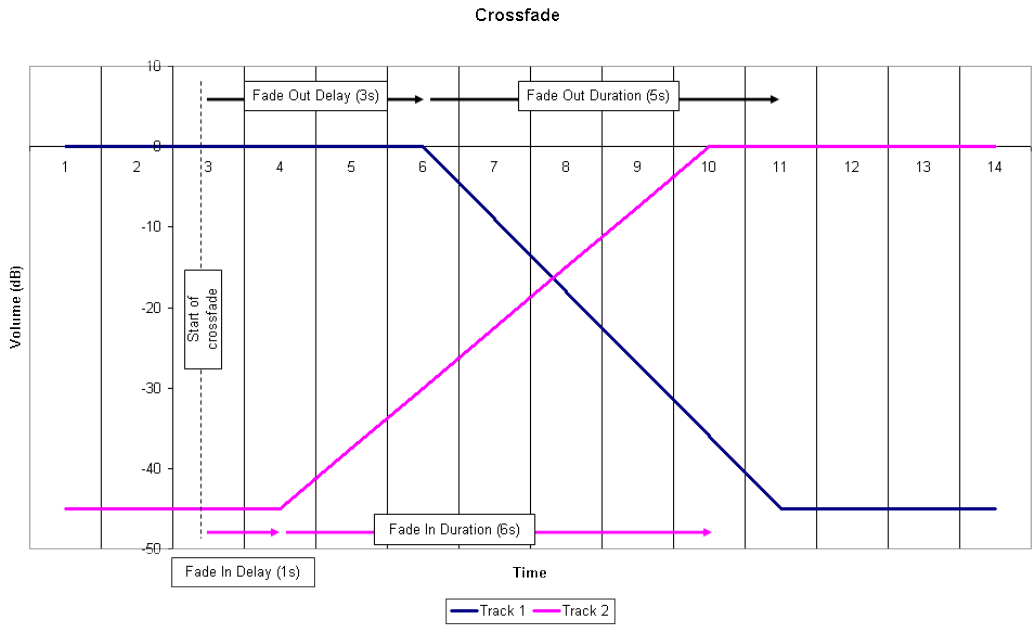
Fade Out Delay. The "fade out delay" is the length of time between when the crossfade process begins and when the old track begins to fade out.

Fade Out Duration. The length of time, in seconds, that it takes your music to fade out once the Fade Out Delay has ended.

Fade Out Mode. If set to Crossfade, one song will fade out and the next song will simultaneously fade in. If set to Mix, the ending song will not fade out at all, and will continue to play as normal until its end with the starting song fading in from under it. Mix mode is not used for manual track skips, even if it is selected here.

Note: The rules above apply except in the instance where Fade Out Delay plus Fade Out Duration is less then Fade In Delay (which would create a gap in the audio). In this case, the Fade In Delay is reduced to eliminate the gap.

The graphic below illustrates how the different settings work in practice.



7.9. Replaygain

This allows you to control the replaygain function. The purpose of replaygain is to adjust the volume of the music played so that all songs (or albums, depending on your settings) have the same apparent volume. This prevents sudden changes in volume when changing between songs recorded at different volume levels. For replaygain to work, the songs must have been processed by a program that adds replaygain information to the ID3 tags (or Vorbis tags).

Options for replaygain are:

Replaygain Type. Choose the type of replaygain to apply:

- **Album Gain.** Maintain a constant volume level between albums, but keep any intentional volume variations between songs in an album. (If album gain value is not available, uses track gain information).
- **Track Gain.** Maintain a constant volume level between tracks. If track gain value is not available, no replaygain is applied.
- **Track Gain If Shuffling.** Maintains a constant volume between tracks if Shuffle is set to Yes. Reverts to album mode if Shuffle is set to No.
- **Off.** Do not process replaygain information, i.e. turn off the replaygain function.

Prevent Clipping. Avoid clipping of a song's waveform. If a song would clip during playback, the volume is lowered for that song. Replaygain information is needed for this to work.

Pre-amp. This allows you to adjust the volume when replaygain is applied. Replaygain often lowers the volume, sometimes quite much, so here you can compensate for that. Please note that a (large) positive pre-amp setting can cause clipping, unless prevent clipping is enabled. The pre-amp can be set to any decibel (dB) value between -12 dB and +12 dB, in increments of 0.5 dB.

7.10. Track Skip Beep

Controls the volume of the beep that is heard when skipping forward or backward between tracks. The beep is disabled when set to Off.

7.11. Auto-Change Directory

Control what Rockbox does when it reaches the end of a directory. If Auto-Change Directory is set to Yes, Rockbox will continue to the next directory. If Auto-Change Directory is set to No, playback will stop at the end of the current playlist. Using the Random feature requires you to first generate a folder list via the Random Folder Advance Configuration plugin (see section 12.4.14 (page 148)).

Note: You must have the Repeat option set to No for Auto-Change Directory to function properly.

Note: This feature only works when songs have been played from the file browser. Using it with the database may cause unexpected behaviour.

7.12. Constrain Auto-Change

If enabled and you have set Start File Browser Here to a directory other than root, Auto-Change Directory will be constrained to the directory you have chosen and those below it. See section 4.1.2 (page 24).

7.13. Last.fm Log

Enables logging of your played tracks for submittal to http://www.last.fm. This service was formerly known as *Audioscrobbler*. When you enable this option, you'll have to reboot to start the logging. The log-file is called `.scrobbler.log`,and is to be found in the root directory of your player.

Note: See ☞LastFMLog for a further description, and for tools you can use to submit your Last.fm log.

7.14. Cuesheet Support

Enables reading of cuesheet files for played tracks. If a cuesheet is found for a track, track markers are displayed on the progressbar and it is possible to skip between the tracks within the cuesheet. Also the information found in the cuesheet file will replace the information from the ID3 tags. When you enable this option, you'll have to reboot for it to come into effect.

Cuesheet files should have the same file name as the audio file they reference, except with the extension `.cue`. This file can either reside in the same directory as the audio file (checked first), or within the `.rockbox/cue` directory.

The contents of a cuesheet file can also be embedded within the metadata of an audio file. There is currently support for the FLAC tag/ Vorbis comment *CUESHEET* or the ID3v2 *TXXX CUESHEET* tag.

7.15. Skip Length

Designed to speed up navigation when listening to long audio tracks, Skip Length changes the behaviour of the **Rewind** and **Forward** buttons so that they skip by a given time instead of skipping to a new track. The Skip to Outro option changes the behaviour so that the buttons skip to just before the end of the track, so that the last few seconds are played before the next track.

7.16. Prevent Track Skipping

If this option is enabled, the ability to manually skip tracks is disabled in order to avoid accidental track skips. It does not prevent changing tracks if a track ends, which can be achieved by combining this option with Repeat set to One

7.17. Rewind Before Resume

When restarting a track or a bookmark, a short rewind can be done before the playback is started. This can be useful when listening to speech material, to help remember what was being said just before playback was stopped. The size of the rewind can be set to various values between 0 (off) and 60 seconds.

Note: This option does not apply to resuming a paused track. Use the next option for rewinding on pause.

Note: The actual rewind distance may differ a little from the requested value, depending on the file in question.

7.18. Rewind on Pause

This option rewinds the current track by a small amount whenever it is paused (not stopped). The amount to rewind can be set between 0 and 15 seconds.

8. General Settings

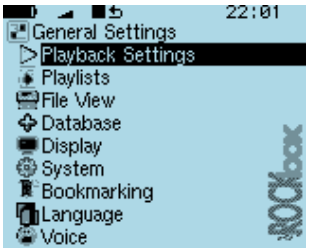


Figure 8.1.: The general settings screen

8.1. Playlist

The Playlist sub menu allows you to configure settings related to playlists.

Recursively Insert Directories. If set to On, then when a directory is inserted or queued into a dynamic playlist, all subdirectories will also be inserted. If set to Ask, Rockbox will prompt the user about whether to include sub-directories.

Warn When Erasing Dynamic Playlist. If set to Yes, Rockbox will provide a warning if the user attempts to take an action that will cause Rockbox to erase the current dynamic playlist.

8.2. File View

The File View menu deals with options relating to how the File Browser displays files.

Sort Case Sensitive. If this option is set to Yes, all files that start with upper case letters will be listed first, followed by all files that begin with lower case letters. If this option is set to NO, then case will be ignored when sorting files.

Sort Directories. This option controls how Rockbox sorts directories. The default is to sort them alphabetically. By date sorts them with the oldest directory first. By newest date sorts them with the newest directory first.

Sort Files. This option controls how Rockbox sorts files. All of the options for Sort Directories are available in this option. In addition, there is a By type option which sorts files alphabetically by their type (such as `.mp3`) then alphabetically within each type.

Interpret numbers when sorting. As whole numbers enables a sorting algorithm which is similar to the default sorting of, for example, Windows Explorer, Mac OS X's Finder or Nautilus, with regards to numbers at the beginning or within filenames. It combines consecutive digits to a number used for sorting, taking leading zeros into account.
As digits disables this algorithm, and causes every digit to be compared separately. The following table demonstrates the two sorting methods.

As whole numbers	As digits
03 Jackson.mp3	03 Jackson.mp3
1 Ring Of Fire.mp3	1 Ring Of Fire.mp3
2 I Walk The Line.mp3	10 A Thing Called Love.mp3
10 A Thing Called Love.mp3	2 I Walk The Line.mp3
Episode 1.ogg	Episode 1.ogg
Episode 57.ogg	Episode 233.ogg
Episode 233.ogg	Episode 57.ogg

Show Files. This option controls which files are displayed in the File Browser.

All. The File Browser displays all files and directories. Extensions are shown. No files or directories are hidden.

Supported. The File Browser displays all directories and files supported by Rockbox (see section A.1 (page 164)). Files and directories starting with . (*dot*) or with the *hidden* flag set are hidden.

Music. The File Browser displays only directories, playlists and the supported *audio* file formats. Extensions are stripped. Files and directories starting with . or with the "hidden" flag set are hidden.

Playlists. The File Browser displays only directories and playlists, for simplified navigation.

Show Filename Extensions. This option controls how file extensions are shown in the File Browser.

Off. The file extensions are never shown.

On. The file extensions are always shown.

Only unknown types. Only the extensions of unknown filetypes are shown.

Only when viewing all types. Only show file extensions when Show Files is set to All.

Follow Playlist. This option determines what directory the File Browser displays first. If Follow Playlist is set to Yes, when you enter the File Browser from the WPS, you will find yourself in the same directory as the currently playing file.

If Follow Playlist is set to No, when you enter the File Browser from the WPS, you will find yourself in the directory you were in when you last left the File Browser.

Show Path. If this setting is set to Full Path the full path to the current directory will be displayed on the first line in the File Browser. If set to Current Directory Only only the name of the current directory will be displayed.

This has a similar effect on the Database browser. If set to Current Directory Only or Full Path, then the title of each menu will be displayed on the first line in the Database Browser.

8.3. Database

This sub menu allows you to configure the database. See section 4.2 (page 26) for more information about using the database.

8.4. Display

LCD Settings. This sub menu contains settings that relate to the display of the player.

Backlight. The amount of time the backlight shines after a key press. If set to Off, the backlight will not light when a button is pressed. If set to On, the backlight will never shut off. If set to a time (1 to 90 seconds), the backlight will stay lit for that amount of time after a button press.

Backlight (While Plugged In). This setting is equivalent to the Backlight setting except it applies when the player is plugged into the charger.

Backlight on Hold. This setting controls the behavior of the backlight when the Hold switch is toggled. If set to Normal the backlight will behave as usual. If set to Off the backlight will be turned off immediately when the Hold switch is engaged and if set to On the backlight will be turned on and stay on while the Hold switch is engaged.

Caption Backlight. This option turns on the backlight a number of seconds before the start of a new track, and keeps it on for the same number of seconds after the beginning so that the display can be read to see song information. The amount of time is determined by the value of the backlight timeout setting, but is no less than 5 seconds.

First Keypress Enables Backlight Only. With this option enabled the first keypress while the backlight is turned off will only turn the backlight on without having any other effect. When disabled the first keypress will *also* perform its appropriate action.

Brightness. Changes the brightness of your LCD display.

Contrast. Changes the contrast of your LCD display.

Warning: Setting the contrast too dark or too light can make it hard to find this menu option again!

LCD Mode. This setting lets you invert the colours of the display.

Upside Down. Displays the screen so that the top of the display is nearest the buttons. This is sometimes useful when carrying the player in a pocket for easy access to the headphone socket.

Scrolling. This feature controls how text will scroll in Rockbox. You can configure the following parameters:

Scroll Speed. Sets how many times per second the automatic horizontal scrolling text will move a step.

Scroll Start Delay. Controls how many milliseconds Rockbox should wait before a new text begins automatically scrolling.

Scroll Step Size. Defines the number of pixels the text should move for each step, as used by the Scroll Speed setting.

Bidirectional Scroll Limit. Rockbox has two different automatic horizontal scrolling methods: 1) always scrolling the text to the left until the line has ended and then beginning again at the start, and 2) moving to the left until you can read the end of the line and then scrolling right until you see the beginning again. Rockbox chooses which method it should use depending of how much it has to scroll to the left. This setting lets you tell Rockbox where that limit is, expressed in percentage of the line length.

Screen Scrolls Out of View. Screens can be manually scrolled horizontally by pressing . Setting this option to Yes will keep the list entries at their fixed positions and allow them to be scrolled out of view, whereas No will only scroll those entries which surpass the right margin.

Screen Scroll Step Size. Defines the number of pixels the horizontal manual screen scroll should move for each step.

Paged Scrolling. When set to Yes scrolling vertically on pages that surpass the screen size will page up/down instead of simply changing lines. This can be useful on slow displays.

List Acceleration Start Delay. This setting enables the acceleration of scroll speed in lists when holding **Scroll Up** or **Scroll Down**. When set to Off the acceleration is disabled. When any other value is set the acceleration will start to accelerate after holding **Scroll Up** or **Scroll Down** for the chosen time (in seconds).

List Acceleration Speed. This setting controls how fast the scroll speed accelerates. The scroll speed will increase every N seconds. For example, selecting Speed up every 3s will increase the scroll speed every 3 seconds while **Scroll Up** or **Scroll Down** is held.

Peak Meter. The peak meter can be configured with a number of parameters.

Peak Release. This determines how fast the bar shrinks when the music becomes softer. Lower values make the peak meter look smoother. Expressed in scale units per 10 ms.

Peak Hold Time. Specifies the time after which the peak indicator will reset. For example, if you set this value to 5 s, the peak indicator displays the loudest volume value that occurred within the last 5 seconds. Larger values are useful if you want to find the peak level of a song, which might be of interest when copying music from the player via the analogue output to some other recording device.

Clip Hold Time. The number of seconds that the clipping indicator will be visible after clipping is detected.

Clip Counter. Show the number of times the clip indicator went active during recording in front of the peak meters.

Scale. Select whether the peak meter displays linear or logarithmic values. The human ear perceives loudness on a logarithmic scale. If the Scale setting is set to Logarithmic (dB) scale, the volume values are scaled logarithmically. The volume meters of digital audio devices usually are scaled this way. On the other hand, if you are interested in the power level that is applied to your headphones you should choose Linear display. This setting cannot be displayed in units like volts or watts because such units depend on your headphones.

Minimum and maximum range. These two options define the full value range that the peak meter displays. Recommended values for the Logarithmic (dB) setting are -40 dB for minimum and 0 dB for maximum. Recommended values for Linear display are 0 and 100%. Note that -40 dB is approximately 1% in linear value, but if you change the minimum setting in linear mode slightly and then change to the dB scale, there will be a large change. You can use these values for 'zooming' into the peak meter.

Default Codepage. A codepage describes the way extended characters that are not available within the ASCII character set are encoded. ID3v1 tags do not have a codepage encoding contained so Rockbox needs to know what encoding has been used when generating these tags. This should be "ISO-8859-1" but to support languages outside Western Europe most applications use the setting of your operating system instead. If your operating system uses a different codepage and you are getting garbled extended characters you should adjust this settings. In most cases sticking to "ISO-8859-1" would be sufficient.

8.5. System

8.5.1. Battery

Options relating to the battery in the player.

Battery Capacity. This setting can be used to tell Rockbox what capacity (in mAh) the battery being used has. The default is , which is the capacity value for the standard battery shipped with the player. Rockbox uses this value for runtime estimation, not battery percentage calculation. Changing this setting has no effect whatsoever on actual battery life. This setting only affects the accuracy of the runtime estimation as shown on screen.

8.5.2. Disk

Options relating to the hard disk.

Disk Spindown. Rockbox has a timer that makes it spin down the hard disk after it is idle for a certain amount of time. This setting controls the amount of time between the last user activity and the time that the disk spins down. This idle time is only affected by user activity, like navigating through the File Browser. When the hard disk spins up to fill the audio buffer, it automatically spins down afterwards.

Directory Cache. Rockbox has the ability to cache the contents of your drive in RAM. The Directory Cache takes a small amount of memory away from Rockbox that would otherwise be used to buffer music, but it speeds up navigation in the file browser by eliminating the slight pause between the time a navigation button is pressed and the time Rockbox responds. Turning this setting on activates the directory cache, and turning it off deactivates the directory cache.

Note: The first time you enable the directory cache, Rockbox will request a reboot of the player and upon restarting take a few minutes to scan the drive. After this, the directory cache will work in the background.

8.5.3. Limits

This sub menu relates to limits in the Rockbox operating system.

Max Entries in File Browser. This setting controls the limit on the number of files that you can see in any particular directory in the file browser. You can configure the size to be between 50 and 10,000 files in steps of 50. The default is 400. Higher values will shorten the music buffer, so you should increase this setting *only* if you have directories with a large number of files.

Max Playlist Size. This setting controls the maximum size of a playlist. The playlist size can be between 1,000 and 32,000 files, in steps of 1,000 (default is 10,000). Higher values will shorten the music buffer, so you should increase this setting *only* if you have very large playlists.

Glyphs To Cache. This sets the default memory allocation size for fonts in unique glyphs. This should be set to the number of unique language glyphs and punctuation marks that are frequently displayed. The default is 250.

Note: You will need to restart your player for changes to Max Entries in File Browser or Max Playlist Size to take effect while Glyphs To Cache will affect the next font load.

8.5.4. Car Adapter Mode

This option turns On and Off the car ignition auto stop function.

Car Adapter Mode. When using the player in a car, Car Adapter Mode automatically stops playback on the player when power (i.e. from cigarette lighter power adapter) to the external DC in jack is turned off. If the Car Adapter Mode is set to On, Rockbox will pause playback when the external power off condition is detected. Rockbox will then shutdown the player after the length of time set in the Idle Poweroff setting (see section 8.6.2 (page 68)). If power to the DC in jack is turned back on before the *Idle Poweroff* function has shut the player off, playback will be resumed 5 seconds after the power is applied. This delay is to allow for the time while the car engine is being started.

Once the player is shut off either manually, or automatically with the Idle Poweroff function, it must be powered up manually to resume playback.

8.5.5. Keyclick

This menu controls key clicks on button presses.

Keyclick. This setting controls how strong the keyclicks are. If set to Off, the keyclicks will be disabled.

Keyclick repeats. This setting turns keyclick repeats On and Off. If set to On, the keyclicks will be repeated when you hold down a button. If set to Off, you will hear only one click.

8.6. Startup/Shutdown

The Startup/Shutdown sub menu allows you to configure items which are run at startup, or initiate a shutdown when conditions are met.

8.6.1. Start Screen

Set the screen that Rockbox will start in. The default is the main menu but the following options are available:

Previous Screen. Start Rockbox in the same screen as when it was shut off.

Main Menu. Show the main menu.

Files. Display the file browser, starting in the root directory of your player.

Database. Show the default database view.

Resume Playback. Go to the WPS and and resume playback from where it was before turning off (if there is a playlist to resume).

Settings. Display the main settings menu.

Recording. Start the player in the recording screen (recording does not start automatically).

FM Radio. Go to the radio screen and start playing.

Recent Bookmarks. Show the list of recent bookmarks as described in section 8.7 (page 69). Bookmarking needs to be enabled.

8.6.2. Idle Poweroff

Rockbox can be configured to turn off power after the unit has been idle for a defined number of minutes. The player is idle when playback is stopped or paused. It is not idle while the USB or charger is connected , or while recording. Settings are either Off or 1 to 10 minutes in 1 minute steps. Then 15, 30, 45 or 60 minutes are available.

8.6.3. Sleep Timer

The Sleep Timer powers off your player after a given time, whether playing or not.

Start Sleep Timer (*duration*): Shown when the Sleep Timer is inactive, this option will initiate a Sleep Timer with the duration shown in brackets.

Cancel Sleep Timer (*remaining*): Shown when the Sleep Timer is active, this option will cancel the current Sleep Timer.
The time remaining before completion is shown in brackets.

Default Sleep Timer Duration: The default number of minutes a new Sleep Timer will run for.
The values range from 5 minutes to 5 hours in 5 minute steps.
If a timer is currently active, the timer's duration will be set to the newly entered value.
The value set is persistent, see section E (page 190).

Start Sleep Timer On Boot: If set, a Sleep Timer will be initiated when the device starts.

Restart Sleep Timer On Keypress: If set, when a Sleep Timer is active and a key is pressed, the Sleep Timer will be restarted with the initial duration.

8.7. Bookmarking

Bookmarks allow you to save your current position within a track so that you can return to it at a later time. Bookmarks also store rate, pitch and speed information from the Pitch Screen (see section 4.3.3 (page 32)). Bookmarks are saved on a per directory basis or for individual (saved) playlists. You can store multiple bookmarks, even for the same track. When there's already a bookmark for a directory or playlist, new bookmarks are added before existing ones.

Bookmarks are stored next to the directory or playlist they reference, in a file with the same name as the directory or playlist and a ".bmark" extension. To load a bookmark, select the bookmark file and then select the bookmark to load. There are other ways to load a bookmarks mentioned below.

Note: Bookmarking only works when tracks are launched from the file browser, and does not work for tracks launched via the database. In addition, they do not work with dynamic playlists.

Bookmark on Stop. This option controls whether Rockbox creates a bookmark when playback is stopped manually.

No. Do not create bookmarks.

Yes. Always create bookmarks.

Ask. Ask if a bookmark should be created.

Yes – Recent Only. Always create a bookmark, but only in the recent bookmarks list.

Ask – Recent Only. Ask if a bookmark should be created, but only add it to the recent bookmarks list.

When either Yes – Recent Only or Ask – Recent Only is selected, bookmarks are only created if the Maintain a List of Recent Bookmarks is enabled.

Note: The Resume function remembers your position in the most recently accessed track regardless of how the Bookmark on Stop option is set.

Update on Stop. If set to "No", this setting has no effect and does not affect any other settings. If set to "Yes", and the file to which a new bookmark would be added already exists, this option overrides the previous setting (Bookmark on Stop) and unconditionally creates a bookmark. This is useful if you don't generally want to create bookmarks but only want to add them to already existing bookmark files. In this case you should set the setting Bookmark on Stop to "No" and the setting Update on Stop to "Yes".

Load Last Bookmark. This option controls if Rockbox should automatically load a bookmark for a file, when that file is played.

No Always start from the beginning of the track or playlist.

Yes Automatically return to the position of the last bookmark. Start from the beginning if there are no bookmarks.

Ask Ask if playback should start from the beginning of the track or from one of the bookmarks.

Maintain a list of Recent Bookmarks. If this option is enabled, a list of the most recently created bookmarks may be accessed through the Recent Bookmarks option in the Main Menu. This list contains up to ten entries.

No Do not keep a list of recently used bookmarks. This also removes the Recent Bookmarks from the Main Menu.

Yes Keep a list of recently used bookmarks. Each new bookmark is added to the list of recent bookmarks.

Unique Only Add each new bookmark to the list of recently used bookmarks, but only keep one bookmark from the current directory or playlist; any previous entries are removed.

The following keys can be used to navigate in any bookmark list.

Key	Action
Scroll Down	Selects the next bookmark.
Scroll Up	Selects the previous bookmark.
Enter	Resumes from the selected bookmark.
Menu	Exits Recent Bookmark menu
Long **Rec**	Deletes the currently selected bookmark
Long **Enter**	Enters the context menu for the selected bookmark.

There are two options in the context menu:

- Resume will commence playback of the currently selected bookmark entry.
- Delete will remove the currently selected bookmark entry from the list.

8.8. Automatic resume

The automatic resume feature stores and recalls resume positions for all tracks without user intervention. These resume points are stored in the database, and thus automatic resume only works when the database has been initialized.

When automatic resume is enabled, manually selected tracks resume playback at their last playback position. It does not matter in which way you start the track; tracks are resumed whether they are navigated to through the database browser or file browser,

by starting a playlist, or by skipping through tracks in the current playlist. (As an exception, when a track is resumed by loading a bookmark, the playback position saved in the bookmark takes precedence.)

Optionally, you can also enable automatic resume for automatic track transitions. In this case, the next track will be resumed as well instead of starting playback at its beginning. This is most useful for podcasts, and can be enabled on a per-directory basis.

A track's resume position is updated whenever playback of that track stops, including when explicitly stopping the track, powering off the player, or starting playback of another track.

If you intend to start a track from its beginning but notice that it was resumed, you can press **Rewind** in the WPS to skip back to its beginning. When pressing **Rewind** again in the first few seconds of a track to go to the previous track, the previously (on first button press) saved resume position is retained. Therefore, you can also use **Rewind** and **Forward** to skip across tracks in a playlist without losing their resume position.

Automatic resume. This option enables or disables automatic resume globally. When Rockbox detects that the database (which is needed for this feature) has not been initialized yet, it asks whether it should be initialized right away.

Resume on automatic track change. Controls whether the next track in an automatic track transition should be resumed at its last playback position as well.

No. Automatic resume works only for manual track selection.

Yes. Always attempt to resume – for both manual and automatic track changes.

In custom directories only. Configure directories in which to enable resume on automatic track change. Selecting this option starts the text editor, in which you can enter the (absolute, case-insensitive) directory names separated by colons (":").

A typical value is "/podcast", which matches all files in directories `/PODCAST`, `/Podcast` or `/podcast` and their subdirectories, but not in directories `/podcasts` (mind the trailing "s") or `/audio/podcast`.

8.9. Language

This setting controls the language of the Rockbox user interface. Selecting a language will activate it. The language files must be in the `/.rockbox/langs/` directory. See section 13.1.4 (page 153) for further details about languages.

8.10. Voice

Voice Menus. This option controls the voicing of menus/settings as they are selected by the cursor. In order for this to work, a voice file must be present in the

`/.rockbox/langs/` directory on the player. Voice files are large and are not shipped with Rockbox by default. The voice file is the name of the language for which it is made, followed by the extension `.voice`. So for English, the file name would be `english.voice`. This option is on by default, but will do nothing unless the appropriate voice file is installed in the correct place on the player. The Voice Menus have several limitations:

- Setting the Sound Option Channels to Karaoke may disable voice menus.
- Plugins and the wake up alarm do not support voice features.

Voice Directories. This option controls voicing of directory names. A voice file must be present for this to work. Several options are available.

Spell. Speak the directory name by spelling it out letter by letter. Support is provided only for the most common letters, numbers and punctuation.

Numbers. Each directory is assigned a number based upon its position in the file list. They are then announced as "Directory 1", "Directory 2" etc.

Off. No attempt will be made to speak directory names.

You can use pre-generated .talk clips to have directory names spoken properly, but you must enable this explicitly (see below).

Use Directory .talk Clips. This option turns on the use of .talk clips for directories.

On. Use special pre-recorded files (`_dirname.talk`) in each directory. These must be generated in advance, and are typically produced synthetically using a text-to-speech engine on a PC.

Off. No checking is made for directory .talk clips; they are not used even if present. This can reduce disk activity.

Use of a .talk clip takes precedence over other directory name voicing. Otherwise (e.g. if a .talk clip is not available), voicing uses the method set under Voice Directories above.

Voice Filenames. This option controls voicing of filenames. Again, a voice file must be present for this to work. The options provided are Spell, Numbers, and Off which function the same as for Voice Directories. You can use pre-generated .talk clips to have filenames spoken properly, but you must enable this explicitly (see below).

Use File .talk Clips. This option turns on the use of .talk clips for files.

On. Use special pre-recorded files for each file. This functions the same as for directories except that the .talk clip file must have the same name as the described file with an extra .talk extension (e.g. `Punkadiddle.mp3` would require a file called `Punkadiddle.mp3.talk`).

Off. No checking is made for file .talk clips; they are not used even if present. This can reduce disk activity.

Use of a .talk clip takes precedence over other filename voicing. Otherwise (e.g. if a .talk clip is not available), voicing uses the method set under Voice Filenames above.

Say File Type. This option turns on voicing of file types when Voice Filenames is set to Spell or Numbers. When Voice Directories is set to Spell, "Directory" will be voiced after each spelled out directory.

Announce Battery Level. When this option is enabled the battery level is announced when it falls under 50%, 30% and 15%.

See ☞VoiceHowto for more details on configuring speech support in Rockbox.

9. Theme Settings

The Theme Settings menu offers options that you can change to customize the visual appearance of Rockbox.

Browse Theme Files. This option will display all the currently installed themes on the player, press **Enter** to load the chosen theme and apply it.

A theme is a configuration file, stored in a specific directory, that typically changes the WPS , font used and on some platforms additional information such as background image and text colours.

There are a number of themes that ship with Rockbox. If none of these suit your needs, many more can be downloaded from .

Note: Themes do not have to be purely visual. It is quite possible to create a theme that switches between audio configurations for use in the car, with headphones and when connected to an external amplifier. See section 13.2.2 (page 154) for more details.

Font. Browse the installed fonts on your player. Selecting one will activate it. See section 13.1.3 (page 152) for further details about fonts.

While Playing Screen. Opens the File Browser in the `/.rockbox/wps` directory and displays all `.wps` files. Selecting one will activate it, **Menu** will exit back to the menu. For further information about the WPS see section 4.3 (page 28). For information about editing a .wps file see section 13.2 (page 154).

Show Icons. Rockbox has the ability to display an icon to the left of the file in the File Browser. For details of these icons, see section A.1 (page 164). These icons can also be customised. See the ☞IconSets and ☞CustomIcons Wiki pages for details.

Clear Backdrop. Rockbox allows you to select bitmap pictures to use as backdrops, see section 13.1.5 (page 153) for further information. This option allows you to clear the backdrops that you set.

Status/Scrollbar. Settings related to on screen status display and the scrollbar.

Scroll Bar. Allows you to choose where the vertical scroll bar should appear.

Scroll Bar Width. Allows you to choose the width of the scroll bar (in pixels). Default value is 6.

Status Bar. Allows you to choose where to display the statusbar.

Volume Display. Controls whether the volume is displayed as a graphic or a numeric value on the Status Bar. If you select a numeric display, volume is displayed in decibels. See section 6.1 (page 47) for more on the volume setting.

Battery Display. Controls whether the battery charge status is displayed as a graphic or numerical percentage value on the Status Bar.

Line Selector Type. This option allows you to select which type of line selector to use.

Pointer. A small arrow to the left of the menu text.

Bar (inverse). A bar with inverted foreground and background colour.

10. Recording Settings

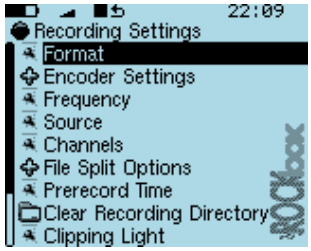


Figure 10.1.: The recording settings screen

Note: To change the location where recordings are stored open the Context Menu (see section 4.1.2 (page 23)) on the directory where you want to store them in the File Browser and select Set As Recording Directory.

10.1. Format

Choose which format to save your recording in. The available choices are the two uncompressed formats PCM Wave and AIFF, the losslessly compressed WavPack and the lossy MPEG Layer 3.

10.2. Encoder Settings (MP3 only)

This sets the bitrate when using the MPEG Layer 3 format.

10.3. Frequency

Choose the recording frequency (sample rate). are available. Higher sample rates use up more disk space, but give better sound quality.

Note: The 11.025 kHz setting is not available when using MPEG Layer 3 format.

10.4. Source

Choose the source of the recording. The options are: Microphone, Line In and FM Radio. For more information on recording from the radio see section 5.9 (page 42).

10.5. Channels

This allows you to select mono or stereo recording. Please note that for mono recording, only the left channel is recorded. Mono recordings are usually somewhat smaller than stereo.

10.6. Mono Mode

When configured to record to mono and the source is a stereo signal, use this setting to configure how the mono signal is created. Options are L, R and L+R.

10.7. File Split Options

This sub menu contains options for file splitting, which can be used to split up long recordings into manageable pieces. The splits are seamless (frame accurate), no audio is lost at the split point. The break between recordings is only the time required to stop and restart the recording, on the order of 2 – 4 seconds.

Split Measure. This option controls whether to split the recording when the Split Filesize is reached or when the Split Time has elapsed.

What to do when Splitting. This controls what will happen when the splitting condition is fulfilled the two available options here are Start a new file or Stop recording.

Split Time. Set the time to record between each split, if time is used as Split Measure. Options (hours:minutes between splits): Off, 00:05, 00:10, 00:15, 00:30, 1:00, 1:14 (74 minute CD), 1:20 (80 minute CD), 2:00, 4:00, 8:00, 10:00, 12:00, 18:00, 24:00.

Split Filesize. Set the filesize to record between each split, if filesize is used as Split Measure.

10.8. Prerecord Time

This setting buffers a small amount of audio so that when the record button is pressed, the recording will begin from that number of seconds earlier. This is useful for ensuring that a recording begins before a cue that is being waited for.

10.9. Clear Recording Directory

Resets the location where the recorded files are saved to the root of your player's drive.

10.10. Clipping Light

Causes the backlight to flash on when clipping has been detected.
Options: Off, Main unit only, Main and remote unit, Remote unit only.

10.11. Trigger

When you record a source you often are only interested in the sound and not the silence in between. The recording trigger provides you with a tool to automatically distinguish between sound and silence and record the sound only. Unfortunately it is not very easy to make this distinction between silence and sound because you hardly ever encounter real silence. There always are background noises. What is considered as background noise depends on the situation. For example during a lecture the very low noise of rustling paper might be considered as background noise. During a rock concert the murmur of the audience might be considered background noise which is much louder compared to rustling paper. Also the duration of the signal matters. When you record speech you want to record every syllable. When you record live music you may not be interested in that chord the guitarist plays for two minutes before the show to verify his amp is turned on. The trigger features numerous parameters to adapt its behaviour to the desired situation.

Trigger. This parameter specifies the trigger mode. When set to Off the recording must be started manually and apart from the Prerecord time no other parameter has any effect. Once will have the trigger start one recording only; after the recording has finished the input signal will not start another recording. Repeat will have the trigger start multiple recordings.

Trigtype. **Add description of Trigtype** Options: Stop, Pause, New File.

Prerecord Time. This specifies the time that is included into the recording before the trigger event occurs. This is very useful if you record a signal that fades in. Usually you want to set the prerecord time greater than or equal to the start duration. That ensures that you record the entire sound. Strictly speaking the prerecord time is not a special parameter of the trigger. It is available during normal recordings too.

Start Above. The start threshold defines the minimal volume a sound must have to start the recording. It is displayed numerically in the line "Start Above". Note that the unit of the threshold depends on the settings of the peak meter. (i.e. When the peak meter displays dB you can adjust the level in dB and when the peak meter is set to linear the threshold is displayed as percentage.) In the peak meter at the bottom of the screen the start threshold is displayed graphically by a little triangle

pointing to the right. There are two special values. The value Off turns the start condition off. With this setting you have to start the recording manually and the trigger only stops the recording according to the stop condition. The setting -inf sets the trigger to the absolute minimum. This setting only makes sense when you record via a digital input as even the noise of the device itself would exceed this threshold immediately.

for at least. The start duration defines the minimal duration that a signal must exceed the start threshold to start the recording. Depending on your situation you may want to set this setting to 0 (e.g. when copying a song from a commercial medium) or to quite big values. Because sound is not continuous by nature (think of percussion) negligible dropouts are tolerated during this start duration.

Stop Below. When the sound level drops below the stop threshold the recording is stopped. It is displayed numerically in the line "Stop Below". Just like the start threshold the unit of the stop threshold depends on the settings of the peak meter. There's also a small triangular marker in the peak meter at the bottom of the screen. In contrast to the start threshold marker it points to the left. The value Off turns the stop condition off. With this setting you have to stop the recording manually.

for at least. This time specifies the duration the signal must drop below the stop threshold to stop the recording. By selecting high values you can ensure that, for example, trailing fade-outs are recorded entirely.

Presplit Gap. When the signal drops below the stop threshold for the time specified by the presplit gap a new recording may be started when the signal raises above the start threshold. Thus the value of the presplit gap should be smaller than the stop hold time. Otherwise the recording would stop anyway and the presplit gap has no effect. For most uses I recommend to set this parameter equal to the stop hold time. Sometimes you may encounter a sound source (e.g. a CD) where the songs have fade outs and hardly any gaps between the tracks. Here you can set the stop hold time to long values to ensure that all fade outs are recorded completely. By specifying a short presplit gap you still can split the recording into separate tracks whenever the trigger start condition is met.

More information can be found at ☞VolumeTriggeredRecording.

11. Time and Date

Time related menu options. Pressing Long **Enter** will voice the current time if voice support is enabled.

Set Time/Date: Set current time and date.

Wake-Up Alarm: This option will make the player start up at the specified time. Use **Scroll Up** and **Scroll Down** to adjust the minutes setting, **Scroll Down** and **Scroll Up** to adjust the hours. **Enter** confirms the alarm, and **Menu** cancels setting an alarm. If the player is turned on again before the alarm occurs, the alarm will be cancelled.

Alarm Wake Up Screen: This option controls what the player does when it is woken up by the alarm.

Time Format: Choose 12 or 24 hour clock.

12. Plugins

Plugins are programs that Rockbox can load and run. Only one plugin can be loaded at a time. Plugins have exclusive control over the user interface. This means you cannot switch back and forth between a plugin and Rockbox. When a plugin is loaded, you need to exit it to return to the Rockbox interface. Most plugins will not interfere with music playback but some of them will stop playback while running. Plugins have the file extension `.rock`. Most of them can be started from Browse Plugins in the Main Menu.

Viewer plugins get started automatically by opening an associated file (i.e. text files, chip8 games), or from the Open with option on the Context Menu.

12.1. Games

See also the Chip-8 emulator in section 12.3.2 (page 120) .

12.1.1. Blackjack

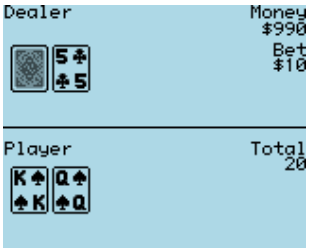


Figure 12.1.: Blackjack

Blackjack, a game played in casinos around the world, is now available in the palm of your hand! The rules are simple: try to get as close to 21 without going over or simply beat out the dealer for the best hand. Although this may not seem difficult, blackjack is a game renowned for the strategy involved. This version includes the ability to split, buy insurance, and double down.

For the full set of rules to the game, and other fascinating information visit
http://www.blackjackinfo.com/blackjack-rules.php

Key	Action
Rewind / Forward / Scroll Up / Scroll Down	Enter betting amount
Enter	Hit (Draw new card) / Select
Play	Stay (End hand)
Rec	Double down
Menu	Pause game and go to menu / Cancel

12.1.2. BrickMania

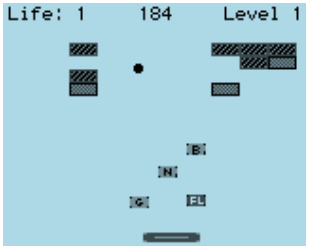


Figure 12.2.: BrickMania

BrickMania is a clone of the classic game Breakout. The aim of the game is to destroy all the bricks by hitting them with the ball once or more. Sometimes a special item falls down when you destroy a brick. For a special item to take effect, you must catch it with the paddle. Look out for the bad ones.

Special items

Displayed	Name	Description
N	Normal	Returns paddle to normal.
D	Die	Ball dies; lose a life.
L	Life	Gain a life.
F	Fire	Allows you to shoot bricks with paddle.
G	Glue	Ball sticks to paddle each time it hits.
B	Ball	Immediately fires another ball.
FL	Flip	Flip left / right movement.

Key	Action
Rewind / **Forward**	Moves the paddle
Enter	Release the ball / Fire
Menu	Open menu / Quit

12.1.3. Bubbles

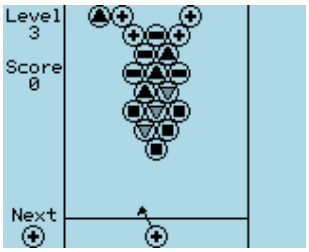


Figure 12.3.: Bubbles

The goal of the game is to beat each level as quickly as possible by clearing the board of all bubbles. Bubbles are removed from the board when a cluster of three of more of the same type is formed. The game is over when any bubbles on the board extend below the bottom line. To make things more difficult, the entire board is shifted down every time a certain number of shots have been fired. Points are awarded depending on how quickly the level was completed.

Key	Action
Scroll Up	Pause game
Rewind / **Forward**	Aim the bubble
Enter	Fire bubble
Menu or Long **Menu**	Exit to menu

12.1.4. Chessbox

Figure 12.4.: Chessbox

Chessbox is a one-person chess game with computer artificial intelligence. The chess engine is a port of GNU Chess 2 by John Stanback.

It also works as a PGN file viewer. Instead of executing the game from the plugin menu, look for any file with `.pgn` extension in the file browser and execute it. Chessbox will show the list of matches included in the file and allow you to select the one you want to watch. After that, you can scroll back and forth through the moves of the game. If the menu is invoked while in the viewer, the user is allowed to select a new match from the same file or quit the game.

"Force play" while the computer is thinking will cause it to make its move immediately. If done while it's your turn, the computer will move for you and flip the board so that you are playing from the other side. If you want, you can force play an entire game and watch the artificial intelligence fight against itself.

When you quit the game the current state will be saved and restored when you resume the game. The menu also allows the user to reload the last game saved, save the current position and start a new game without having to quit the game.

Keys

Key	Action
Rewind, **Forward**, **Scroll Up**, **Scroll Down**	Move the cursor
Enter	Pick up / Drop piece
Rec	Change level
Play	Force play
Menu	Show the menu

12.1.5. Chopper

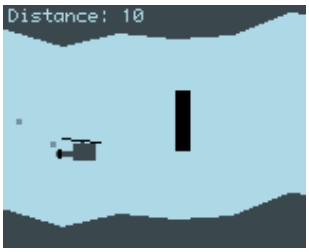


Figure 12.5.: Chopper

Navigate a cavernous maze without banging into walls, the ceiling, or the floor. How long can you fly your chopper?

Key	Action
Enter	Make chopper fly
Menu	Enter menu

12.1.6. Dice

Dice is a simple dice rolling simulator. Select number and type of dice to roll in a menu and start by choosing "Roll Dice". The result is shown as individual numbers as well as the total of the rolled dice.

Key	Action
Enter	Roll dice again
Menu	Quit

12.1.7. Doom

Figure 12.6.: Doom

This is the famous Doom game.

Getting started

For the game to run you need `.wad` game files located in `/.rockbox/doom/` on your player. Create the directory and save the following files there:

rockdoom.wad. The Rockbox `.wad`, based on `prboom.wad` from prboom-2.2.6

Your wad files. Copy all Doom wads you wish to play into that directory.

The needed files can be found at ☞PluginDoom

To play addon wads create the `addons` directory within the doom directory. Place `wad` files in this directory. Currently doom only supports a maximum number of 10 addons.

A free alternative for Doom 2 is FreeDoom (http://freedoom.sourceforge.net). This can be used in place of `doom2.wad`, or it may be used as an addon in Doom, by placing it in the `addons` directory.

Menus

Rockdoom Menu. The Rockdoom menu is shown when Doom is first launched. This is the only time it can be accessed (before starting the game). To re-adjust Rockdoom options, you will need to quit your current game and restart the plugin.

Main Menu. The Doom plugin has a main menu, which is brought up before a game is started. It has the following entries:

Game. Select which (official) wad to launch
Addon. Select which unofficial addon wad to launch (From `/.rockbox/doom/addons` directory)
Demos. Select which demo file to play on game start
Options. Configure low-level Doom options
Play Game. Launch the wad/addon/Demo chosen

Options Menu. This menu has the following options:

Sound. Enable or Disable sound in Doom
Set Keys. Change the game key configuration
Time Demo. Run a timed demo, to test game speed on a player (Only runs on Doom Shareware)
Player Bobbing. Enable or Disable player up/Down movement
Translucency. Enable or Disable sprite translucency (Fireballs, Plasma...)
Fake Contrast. Enable or Disable modified game lighting
Always Run. Make the player always run
Headsup Display. Show the player status when in fullscreen
Statusbar Always Red. Disable colour response statusbar

InGame Main Menu. This menu can only be accessed from within a running game, and is displayed by

New Game. Start a new game
Options. In game options
Load Game. Load a saved game
Save Game. Save the current game
Quit. Quit the game

InGame Options Menu. This menu has the following options:

End Game. Ends the current game
Messages. Enable or Disable in game messages
Screen Size. Shrink or Enlarge the displayed portion of the game
Gamma. Change the brightness (Gamma) of the game
Sound Volume. Change the sound, music and system volume

Note: In game music is not currently supported

Keys

Key	Action
Scroll Up	Move Forward
Scroll Down	Down
Rewind	Turn Left
Forward	Turn Right
Enter	Shoot
Menu	Open
Rec	InGame Menu
Long **Play**	Enter
Play	Change Weapon

Playing the game

After installation of the `wad` files is complete you can start the game. **more description is needed**

12.1.8. Flipit

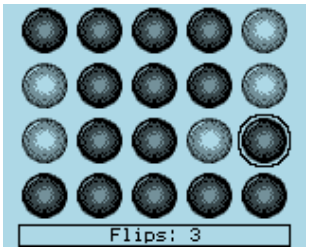


Figure 12.7.: Flipit

Flipping the colour of the token under the cursor also flips the tokens above, below, left and right of the cursor. The aim is to end up with a screen containing tokens of only one colour.

Key	Action
Scroll Up/ Scroll Down/ Rewind/ Forward	Move the cursor
Enter	Flip
Play	Shuffle
Menu	Solve
Rec	Solve step by step
Long **Menu**	Quit the game

12.1.9. Goban

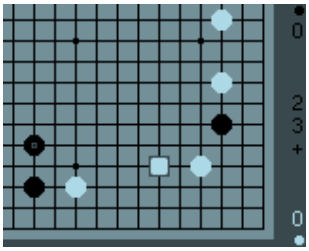


Figure 12.8.: Goban

Goban is a a plugin for playing, viewing and recording games of Go (also known as Weiqi, Baduk, Igo and Goe). It uses standard Smart Game Format (SGF) files for saving and loading games. You can find a short introduction to Go at http://senseis.xmp.net/?WhatIsGo and more information about SGF files can be read at http://senseis.xmp.net/?SmartGameFormat or the SGF specification at http://www.red-bean.com/sgf/.

This plugin can load all modern SGF files (file format 3 or 4) with few problems. It attempts to preserve SGF properties which it doesn't understand, and most common SGF properties are handled fully. It is possible to view (and edit if you like) Kogo's Joseki Dictionary (http://waterfire.us/joseki.htm) with this plugin, although the load and save times can be on the order of a minute or two on particularly slow devices. Large SGF files may stop audio playback for the duration of the plugin's run in order to free up more memory and some very large SGF files will not even load on devices with little available memory.

Note: The plugin does *NOT* support SGF files with multiple games in one file. These are rare, but if you have one don't even try it (the file will most likely be corrupted if you save over it). You have been warned.

The file `/sgf/gbn_def.sgf` is used by the plugin to store any unsaved changes in the most recently loaded game. This means that if you forget to save your changes, you should load `/sgf/gbn_def.sgf` immediately to offload the changes to another file. If you load another file first then your changes will be lost permanently. The `/sgf/gbn_def.sgf` file is also the file loaded if another is not selected.

The information panel which displays the current move number may also contain these markers:

Mark	Meaning
+	There are nodes after the current node in the SGF tree.
*	There are sibling variations which can be navigated to using the *Next Variation* menu option of the *Context Menu*.
C	There is a comment at the current node. It can be viewed/edited using the *Add/Edit Comment* menu option of the *Context Menu*.

Controls

Key	Action
Scroll Up	Move cursor up
Scroll Down	Move cursor down
Rewind	Move cursor left
Forward	Move cursor right
Enter	Play a move (or use a tool if play-mode has been changed).
Rec+ Rewind	Retreat one node in the game tree
Rec+ Forward	Advance one node in the game tree
Menu	Main Menu

Menus

Main Menu. The main menu for game setup and access to other menus.

New. Create a new game with your choice of board size and handicaps.

Save. Save the current state of the game. It will be saved to `/sgf/gbn_def.sgf` unless otherwise set.

Save As. Save to a specified file.

Game Info. View and modify the metadata of the current game.

Playback Control. Control the playback of the current playlist and modify the volume of your player.

Zoom Level. Zoom in or out on the board. If you set the zoom level, it will be saved and used again the next time you open this plugin.

Options. Open the Options Menu.

Context Menu. Open the Context Menu which allows you to set play modes and other tools.

Quit. Leave the plugin. Any unsaved changes are saved to `/sgf/gbn_def.sgf`.

Game Info. The menu for modifying game info (metadata) of the current game. This information will be saved to the SGF file and can be viewed in almost all SGF readers.

Basic Info. Shows a quick view of the basic game metadata, if any has been set (otherwise does nothing). This option does not allow editing.

Time Limit. The time limit of the current game.

Overtime. The overtime settings of the current game.

Result. The result of the current game. This text must follow the format specified at http://www.red-bean.com/sgf/properties.html#RE to be read by other SGF readers. Some examples are *B+R* (Black wins by resignation), *B+5.5* (Black wins by 5.5 points), *W+T* (White wins on Time).

Handicap. The handicap of the current game.

Komi. The komi of the current game (compensation to the white player for black having the first move).

Ruleset. The name of the ruleset in use for this game. The *NZ* and *GOE* rulesets include suicide as a legal move (for multi-stone suicide only); the rest do not.

Black Player. The name of the black player.

Black Rank. Black's rank, in dan or kyu.

Black Team. The name of black's team, if any.

White Player. The name of the white player.

White Rank. White's rank, in dan or kyu.

White Team. The name of white's team, if any.

Date. The date that this game took place. This text must follow the format specified at http://www.red-bean.com/sgf/properties.html#DT to be read by other SGF readers.

Event. The name of the event which this game was a part of, if any.

Place. The place that this game took place.

Round. If part of a tournament, the round number for this game.

Done. Return to the previous menu.

Options. Customize the behavior of the plugin in certain ways.

Show Child Variations? Enable this to mark child variations on he board if there are more than one. Note: variations which don't start with a move are not visible in this way.

Disable Idle Poweroff? Enable this if you do not want the player to turn off after a certain period of inactivity (depends on your global Rockbox settings).

Idle Autosave Time. Set the amount of idle time to wait before automatically saving any unsaved changes. These autosaves go to the file `/sgf/gbn_def.sgf` regardless of if you have loaded a game or used SAVE AS to save the game before or not. Set to OFF to disable this functionality completely.

Automatically Show Comments? If this is enabled and you navigate to a node containing game comments, they will automatically be displayed.

Context Menu. The menu for choosing different play modes and tools, adding or editing comments, adding pass moves, or switching between sibling variations.

Play Mode. Play moves normally on the board. If there are child moves from the current node, this mode will let you follow variations by simply playing the first move in the sequence. Unless it is following a variation, this mode will not allow you to play illegal moves. This is the default mode before another is set after loading a game or creating a new one.

Add Black Mode. Add black stones to the board as desired. These stones are not moves and do not perform captures or count as ko threats.

Add White Mode. Add white stones to the board as desired. These stones are not moves and do not perform captures or count as ko threats.

Erase Stone Mode. Remove stones from the board as desired. These removed stones are not counted as captured, they are simply removed.

Pass. Play a single pass move. This does not change the mode of play.

Next Variation. If the game is at the first move in a variation, this will navigate to the next variation after the current one. This is the only way to reach variations which start with adding or removing stones, as you cannot follow them by "playing" the same move.

Force Play Mode. The same as Play Mode except that this mode will allow you to play illegal moves such as retaking a ko immediately without a ko threat, suicide on rulesets which don't allow it (including single stone suicide), and playing a move where there is already a stone.

Mark Mode. Add generic marks to the board, or remove them.

Circle Mode. Add circle marks to the board, or remove them.

Square Mode. Add square marks to the board, or remove them.

Triangle Mode. Add triangle marks to the board, or remove them.

Label Mode. Add one character labels to the board. Each label starts at the letter 'a' and each subsequent application of a label will increment the letter. To remove a label, click on it until it cycles through the allowed letters and disappears.

Add/Edit Comment. Add or edit a comment at the current node.

Done. Go back to the previous screen.

12.1.10. Invadrox

Figure 12.9.: Invadrox

Invadrox is a clone of the classic arcade game Space Invaders. Kill those pesky aliens before they get to you. Remember, they increase speed, drop down and reverse direction after every pass!

Key	Action
Rewind	Move left
Forward	Move right
Enter	Fire
Menu	Quit

12.1.11. Jackpot

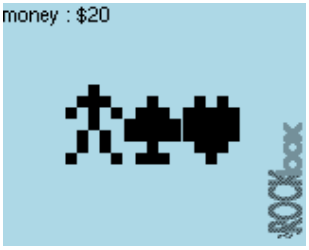


Figure 12.10.: Jackpot

This is a jackpot slot machine game. At the beginning of the game you have 20$. Payouts are given when three matching symbols come up.

Key	Action
Enter	Play
Menu	Exit the game

12.1.12. Jewels

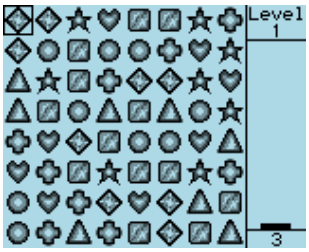


Figure 12.11.: Jewels

Jewels is a simple yet addicting game which involves swapping pairs of jewels in order to form connected segments of three or more of the same type.

The goal of the game is to score as many points as possible before running out of available moves. Higher points are awarded to larger combos. The game advances to the next level after every one hundred points and randomly clears several jewels.

In puzzle mode the aim of the game is to connect the puzzles, by skilful swapping pairs of jewels.

Key	Action
Rewind/ Forward	Move the cursor around the jewels
Enter	Select a jewel
Menu	Menu

12.1.13. MazezaM

Figure 12.12.: MazezaM

The goal of this puzzle game is to escape a dungeon consisting of ten "mazezams". These are rooms containing rows of blocks which can be shifted left or right. You can move the rows only by pushing them and if you move the rows carelessly, you will get stuck. You can have another go by selecting "retry level" from the menu, but this will cost you a life. You start the game with three lives. Luckily, there are checkpoints at levels four and eight.

Key	Action
Scroll Up, **Scroll Down**, **Rewind**, **Forward**	Move Character
Menu	Menu

12.1.14. Minesweeper

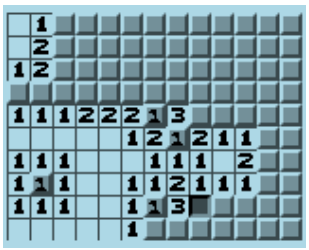


Figure 12.13.: Minesweeper plugin

The classic game of minesweeper. The aim of the game is to uncover all of the squares on the board. If a mine is uncovered then the game is over. If a mine is not uncovered,

then the number of mines adjacent to the current square is revealed. The aim is to use the information you are given to work out where the mines are and avoid them. When the player is certain that they know the location of a mine, it can be tagged to avoid accidentally "stepping" on it.

Key	Action
Scroll Up/ Scroll Down/ Rewind/ Forward	Move the cursor across the minefield
Enter	Toggle flag on / off
Play	Reveal the contents of the current square
Menu	Display the current game status
Long **Menu**	Exit the game

12.1.15. Pegbox

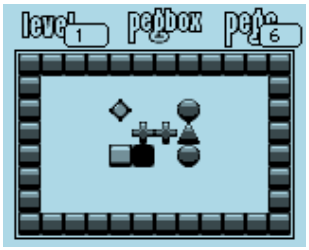


Figure 12.14.: pegbox

To beat each level, you must destroy all of the pegs. If two like pegs are pushed into each other they disappear except for triangles which form a solid block and crosses which allow you to choose a replacement block.

Key	Action
Scroll Up, **Scroll Down**, **Rewind**, **Forward**	to move around
Enter	to choose peg
Menu	to restart level
Play	to go up a level
Rec	to go down a level
Long **Menu**	to quit

12.1.16. Pong

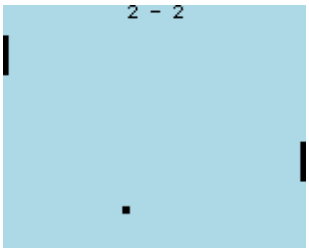


Figure 12.15.: Pong

Pong is a simple one or two player "tennis game". Whenever a player misses the ball the other scores.

The game starts in demo mode, with the CPU controlling both sides.

As soon as a button to control one of the paddles is pressed, control of that paddle passes to the player, so for a single player game, just press the appropriate buttons to control the side you want to play. For a two player game, both players should just press the appropriate buttons for their side.

Key	Action
Rewind	Left player up
Rec	Left player down
Forward	Right player up
Play	Right player down
Long **Menu**	Quit

12.1.17. Reversi

This is a simple implementation of the Reversi game. The objective of the game is to have a majority of own coloured pieces showing at the end of the game. The game rules can be found in the internet.

You can choose to play manually (you place both the white and dark pieces) or to play against a (not very smart) robot.

12.1.18. Robotfindskitten

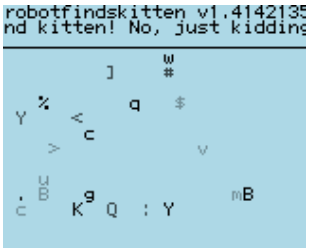


Figure 12.16.: Robotfindskitten

In this game, you are robot (#). Your job is to find kitten. This task is complicated by the existence of various things which are not kitten. Robot must touch items to determine if they are kitten or not. The game ends when robotfindskitten.

Key	Action
Scroll Up, **Scroll Down**, **Rewind**, **Forward**	Move robot
Menu	Quit

12.1.19. Rockblox

Figure 12.17.: Rockblox

Rockblox is a Rockbox version of the classic falling blocks game from Russia. The aim of the game is to make the falling blocks of different shapes form full rows. Whenever a row is completed, it will be cleared away, and you gain points. For every ten lines completed, the game level increases, making the blocks fall faster. If the pile of blocks reaches the ceiling, the game is over.

Key	Action
Rec	Restart game
Rewind	Move left
Forward	Move right
Enter	Move down
Scroll Up	Rotate anticlockwise
Scroll Down +	Rotate clockwise
Play	Drop
Hold switch	Pause
Long **Menu**	Quit

12.1.20. Rockblox1d

Rockblox1d is a game for people who find rockblox too hard. In this version the second dimension is missing so the user only has to move the bricks down. No horizontal moving anymore and no need to rotate the brick!

Key	Action
Scroll Down	Move down faster
Menu or Long **Menu**	Quit

12.1.21. Sliding Puzzle

Figure 12.18.: Sliding puzzle

The classic sliding puzzle game. Rearrange the pieces so that you can see the whole picture, or switch to number tiles if you like it a little easier Includes one picture puzzle, but you can switch the puzzle picture to be the album art of the currently playing music

track, if one exists (see section C (page 171)). You can also use the sliding puzzle plugin as a viewer for supported image types, to turn your own pictures into a puzzle.

Key controls:

Key	Action
Rewind/ Forward/ Scroll Up/ Scroll Down	Move Tile
Enter	Shuffle
Play	Switch between pictures (default puzzle, album art, and your own image if launched via Open With), and numbered tiles
Long **Menu**	Stop the game

12.1.22. Snake

Figure 12.19.: Snake

This is the popular snake game. The aim is to grow your snake as large as possible by eating the dots that appear on the screen. The game will end when the snake touches either the borders of the screen or itself.

Key	Action
Scroll Up/Scroll Down	Change levels (1 is slowest, 9 is fastest)
Play	Toggle Play/Pause

12.1.23. Snake 2

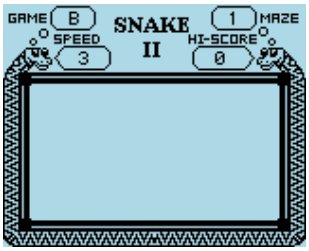


Figure 12.20.: Snake 2 – The Snake Strikes Back

Another version of the Snake game. Move the snake around, and eat the apples that pop up on the screen. Each time an apple is eaten, the snake gets longer. The game ends when the snake hits a wall, or runs into itself.

Key	Action
Rewind/ Forward/ Scroll Up/ Scroll Down	Steer the snake
Play	Pause and resume the game
Long **Menu**	Quit

In game A, the maze stays the same, in game B after an increasing number of apples eaten the maze is replaced by a new one.

12.1.24. Sokoban

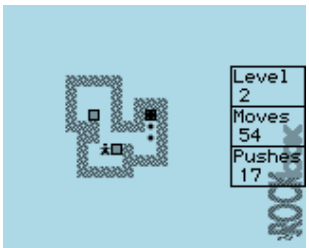


Figure 12.21.: Sokoban

The object of the game is to push boxes into their correct position in a crowded warehouse with a minimal number of pushes and moves. The boxes can only be pushed, never pulled, and only one can be pushed at a time.

Sokoban may be used as a viewer for viewing saved solutions and playing external level sets with the `.sok` extension. Level sets should be in the standard Sokoban text format or RLE (Run Length Encoded). For more information about the level format, see http://sokobano.de/wiki/index.php?title=Level_format

Key	Action
	In game
Scroll Up, **Scroll Down**, **Rewind**, **Forward**	Move the "sokoban" up, down, left, or right
Long **Menu**	Menu
Play+ **Rewind**	Back to previous level
Play+ **Enter**	Restart level
Play+ **Forward**	Go to next level
Rec	Undo last movement
Play	Redo previously undone move
	Solution playback
Play	Pause/resume
Scroll Up/**Scroll Down**	Increase/decrease playback speed
Rewind/**Forward**	Go backward/forward (while paused)
Long **Menu**	Quit

Some places where can you can find level sets:

- http://www.sourcecode.se/sokoban/levels.php
- http://sokobano.de/en/levels.php

Note that some level sets may contain levels that are too large for this version of Sokoban and are unplayable as a result.

12.1.25. Solitaire

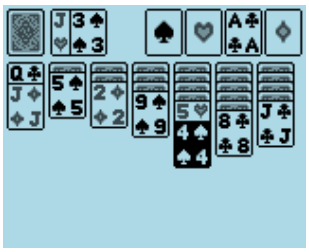


Figure 12.22.: Klondike solitaire

This is the classic Klondike solitaire game for Rockbox. This is probably the best-known solitaire in the world. Many people do not even realize that other games exist. Though the name may not be familiar, the game itself certainly is. This is due in no small part to Microsoft's inclusion of the the game in every version of Windows. Though popular, the odds of winning are rather low, perhaps one in thirty hands.

For the full set of rules to the game, and other interesting information visit http://www.solitairecentral.com/rules/klondike.html

Key	Action
Rewind/ Forward	Move Cursor around.
Enter	Select cards, move cards, reveal hidden cards...
Menu	If a card was selected – unselect it, else
	Draw 3 new cards from the remains stack
Play	Put the card from the top of the remains stack on top of the cursor
Rec	Put the card under the cursor on one of the 4 final colour stacks.
Long **Play**	Put the card on top of the remains stack on one of the final colour stacks.
Menu	Show menu

12.1.26. Spacerocks

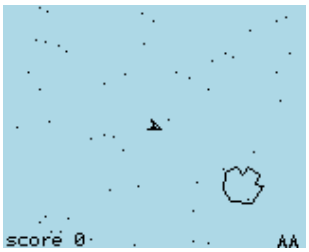


Figure 12.23.: Spacerocks

Spacerocks is a clone of the old arcade game Asteroids. The goal of the game is to blow up the asteroids and avoid being hit by them. Once in a while, a UFO will appear – shoot this for extra points.

Key	Action
Enter	Shoot
Rec	Thrust
Scroll Up/ Scroll Down	Turn left/right
Long **Play**	Teleport
Play	Pause game
Long **Menu**	Quit

12.1.27. Star

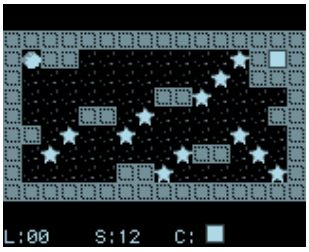


Figure 12.24.: Star game

This is a puzzle game. It is actually a rewrite of Star, a game written by CDK designed for the hp48 calculator.

Rules: Take all of the “o”s to go to the next level. You can switch control between the filled circle, which can take “o”s, and the filled square, which is used as a mobile wall to allow your filled circle to get to places on the screen it could not otherwise reach. The block cannot take “o”s.

Key	Action
Rewind	Move Left
Forward	Move Right
Scroll Up	Move Up
Scroll Down	Move Down
Enter	Switch between circle and square
Play+ Rewind	Previous level
Long **Play**	Reset level
Play+ Forward	Next level
Long **Menu**	Exit the game

12.1.28. Sudoku

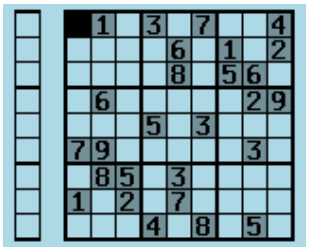


Figure 12.25.: Sudoku

Sudoku in Rockbox can act as both a plugin and a viewer. When starting Sudoku from the Browse Plugins menu, a random game will be generated automatically, and an estimate of its difficulty (very easy, easy, medium, hard or fiendish) will be displayed on the screen. New games can be generated from the Generate menu option. When "playing" an existing Sudoku game file from Rockbox' file browser the plugin is invoked as viewer. The selected Sudoku will get loaded and you can start solving it. The sudoku games need to be stored as text files with the extension `.ss` as single file per game.

You can create and save your own grids under the New menu option. Enter the menu (as described in the key table below) when you have finished and enter the full path to save to including the `.ss` extension (e.g. `/sudoku/new.ss`).

The scratchpad

When you play Sudoku on paper most people like to mark numbers in cells that are possible candidates for the cells. This can be done with the scratchpad, shown as separate column. Change the number under the cursor to the number you want to put on the scratchpad and press the scratchpad button, the number will then be added. If the number was already on the scratchpad it will get removed again. The column is stored separately for every cell on the board. The stored values can be displayed inline as small dots by enabling the Show Markings settings.

Note: The scratchpad is *not* saved when saving the game.

Key	Action
Scroll Up/ Scroll Down/ Rewind/ Forward	Move the cursor
Enter	Change number under the cursor
Long **Enter**	Constantly changing the number under the cursor
Menu	Open Menu
Play	Add/Remove number to scratchpad
Long **Menu**	Quit

Some places where can you can find `.ss` files:

- Simple Sudoku (Advanced Puzzle Packs 1 and 2 located near the bottom of that page): http://www.angusj.com/sudoku/
- Kjell's Sudoku generator/solver: http://kjell.haxx.se/sudoku/

12.1.29. Wormlet

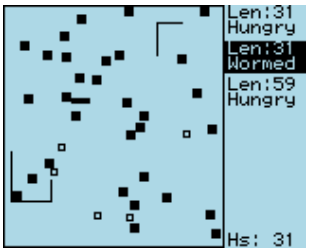


Figure 12.26.: Wormlet game

Wormlet is a multi-worm game on a multi-threaded multi-functional Rockbox console. You navigate a hungry little worm. Help your worm to find food and to avoid poisoned argh-tiles. The goal is to turn your tiny worm into a big worm for as long as possible.

Game controls:

Key	Action
Rewind	Turn left
Forward	Turn right
Scroll Up	Turn Up
Scroll Down	Turn Down

The game

Use the control keys of your worm to navigate around obstacles and find food. Worms do not stop moving except when dead. Dead worms are no fun. Be careful as your worm will try to eat anything that you steer it across. It won't distinguish whether it is edible or not.

Food. The small square hollow pieces are food. Move the worm over a food tile to eat it. After eating the worm grows. Each time a piece of food has been eaten a new piece of food will pop up somewhere. Unfortunately for each new piece of food that appears two new "argh" pieces will appear, too.

Argh. An "argh" is a black square poisoned piece - slightly bigger than food - that makes a worm say "Argh!" when run into. A worm that eats an "argh" is dead. Thus eating an "argh" must be avoided under any circumstances. "Arghs" have the annoying tendency to accumulate.

Worms. Thou shall not eat worms. Neither other worms nor thyself. Eating worms is blasphemous cannibalism, not healthy and causes instant death. And it doesn't help anyway: the other worm isn't hurt by the bite. It will go on creeping happily and eat all the food you left on the table.

Walls. Don't crash into the walls. Walls are not edible. Crashing a worm against a wall causes it a headache it doesn't survive.

Game over. The game is over when all worms are dead. The longest worm wins the game.

Pause the game. Press **Play** to pause the game. Press it again to resume the game.

Stop the game. There are two ways to stop a running game.

- If you want to quit Wormlet entirely simply hit Long **Menu**. The game will stop immediately and you will return to the game menu.
- If you want to stop the game and still see the screen hit Long **Play**. This freezes the game. If you hit Long **Play** button again a new game starts with the same configuration. To return to the games menu you can hit Long **Menu**. A stopped game can not be resumed.

The scoreboard

On the right side of the game field is the score board. For each worm it displays its status and its length. The top most entry displays the state of worm 1, the second worm 2 and the third worm 3. When a worm dies its entry on the score board turns black.

Len: Here the current length of the worm is displayed. When a worm is eating food it grows by one pixel for each step it moves.

Hungry: That's the normal state of a worm. Worms are always hungry and want to eat. It is good to have a hungry worm since it means that your worm is alive. But it is better to get your worm growing.

Growing: When a worm has eaten a piece of food it starts growing. For each step it moves over food it can grow by one pixel. One piece of food lasts for 7 steps. After your worm has moved 7 steps the food is used up. If another piece of food is eaten while growing it will increase the size of the worm for another 7 steps.

Crashed: This indicates that a worm has crashed against a wall.

Argh: If the score board entry displays "Argh!" it means the worm is dead because it tried to eat an "argh". Until we can make the worm say "Argh!" it is your job to say "Argh!" aloud.

Wormed: The worm tried to eat another worm or even itself. That's why it is dead now. Making traps for other players with a worm is a good way to get them out of the game.

Hints

- Initially you will be busy with controlling your worm. Try to avoid other worms and crawl far away from them. Wait until they curl up themselves and collect the food afterwards. Don't worry if the other worms grow longer than yours - you can catch up after they've died.
- When you are more experienced watch the tactics of other worms. Those worms controlled by artificial stupidity head straight for the nearest piece of food. Let the other worm have its next piece of food and head for the food it would probably want next. Try to put yourself between the opponent and that food. From now on you can 'control' the other worm by blocking it. You could trap it by making a 1 pixel wide U-turn. You also could move from food to food and make sure you keep between your opponent and the food. So you can always reach it before your opponent.

12.1.30. Xobox

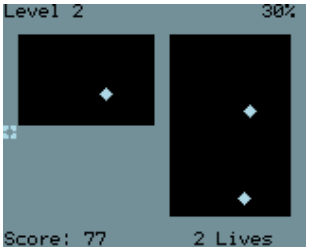


Figure 12.27.: Xobox

Xobox is a simple clone of the well known arcade game Qix. The aim of the game is to section off parts of the arena with your trail in order to remove that section from the game. Be careful not to get in the way of enemy balls because, if they hit you or your trail, you lose a life. To finish a level you have to section off more than 75%.

Key	Action
Scroll Up, **Scroll Down**, **Rewind**, **Forward**	Move around the arena
Play	Pause
Long **Menu**	Open menu

12.2. Demos

12.2.1. Bounce

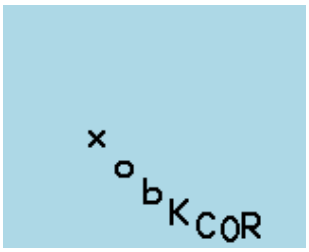


Figure 12.28.: Bounce

This demo is of the word "Rockbox" bouncing across the screen. There is also an analogue clock in the background. In Scroll mode the bouncing text is replaced by a different one scrolling from right to left.

Key	Action
Scroll Up/ Scroll Down	Moves to next/previous option
Forward / Rewind	Increases/decreases option value
Enter	Toggles Scroll mode
Menu or Long **Menu**	Exits bounce demo

Available options are:

Xdist/Ydist. The distance to X axis and Y axis respectively

Xadd/Yadd. How fast the code moves on the sine curve on each axis

Xsane/Ysane. Changes the appearance of the bouncing.

12.2.2. Credits

The credits plugin scrolls the entire list of the names of all the Rockbox contributors after displaying the Rockbox logo and version. This plugin is called when selecting Version from the System section of the Rockbox main menu. Exit at any time by pressing **Menu**.

12.2.3. Cube

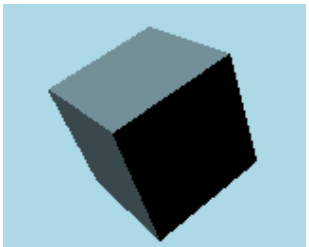


Figure 12.29.: Cube

This is a rotating cube screen saver in 3D.

Key	Action
Enter	Display at maximum frame rate
Play	Pause
Menu	Cycle draw mode
Rewind/ **Forward**	Select axis to adjust
Scroll Down/ **Scroll Up**	Change speed/angle (speed can not be changed while paused)
Long **Menu**	Quit

12.2.4. Demystify

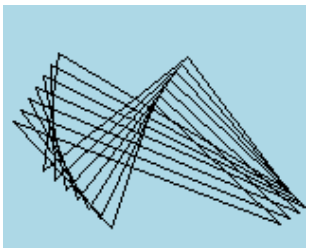


Figure 12.30.: Demystify

Demystify is a screen saver like demo.

Key	Action
Rewind / **Forward**	Increase / decrease speed
Scroll Up / **Scroll Down**	Add / remove polygon
Menu	Quit

12.2.5. Fire

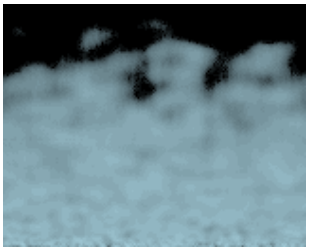


Figure 12.31.: Fire

Fire is a demo displaying a fire effect.

Key	Action
Scroll Up / Scroll Down	Increase / decrease number of flames
Rewind	Toggle flame type
Forward	Toggle moving flames
Menu	Quit

12.2.6. Fractals

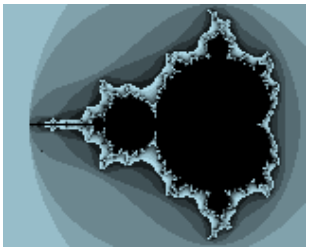


Figure 12.32.: Fractals: Mandelbrot set

This demonstration draws fractal images from the Mandelbrot set using the greyscale engine.

Key	Action
Scroll Down, **Scroll Up**, **Rewind**, **Forward**	Move about the image
Play+ **Scroll Up**	Zoom in
Play+ **Scroll Down**	Zoom out
Play+ **Rewind**	Decrease iteration depth (less detail)
Play+ **Forward**	Increase iteration depth (more detail)
Rec	Reset and return to the default image
Long **Menu**	Quit

12.2.7. Logo

Demo showing the Rockbox logo bouncing around the screen.

Key	Action
Forward / **Rewind**	Increase / decrease speed on the x-axis
Scroll Up / **Scroll Down**	Increase / decrease speed on the y-axis
Menu or Long **Menu**	Quit

12.2.8. Mosaique

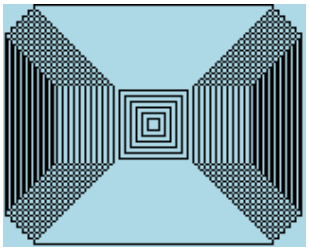


Figure 12.33.: Mosaique

This simple graphics demo draws a mosaic picture on the screen of the player.

Key	Action
Scroll Up	Change the gap between the drawing lines.
Enter	Restart the drawing process.
Menu or Long **Menu**	Exits Mosaique demo

12.2.9. Oscilloscope

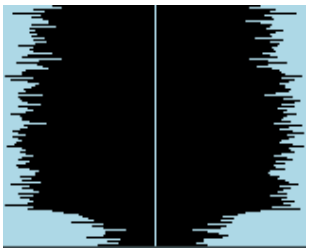


Figure 12.34.: Oscilloscope

This demo shows the shape of the sound samples that make up the music being played. At faster speed rates, the player is less responsive to user input and music may start to skip.

Keys

Key	Action
Enter	Toggle filled / curve / plot
Rec	Toggle whether to scroll or not
Menu	Toggle drawing orientation
Play	Pause the demo
Scroll Up / **Scroll Down**	Increase / decrease volume
Forward/ **Rewind**	Increase / decrease speed
Long **Menu**	Exit demo

12.2.10. PictureFlow

Figure 12.35.: PictureFlow

PictureFlow provides a visualisation of your albums with their associated cover art. It is possible to start playback of the selected album from PictureFlow. Playback will start from the selected track. The PictureFlow plugin will continue to run while your tracks are played.

Requirements

PictureFlow uses both the album art (see section C (page 171)) and database (see section 4.2 (page 26)) features of Rockbox. It is therefore important that these are working correctly before attempting to use PictureFlow. In addition, there are some other points of which to be aware:

- PictureFlow will accept album art larger than the dimensions of the screen, but the larger the dimensions, the longer they will take to scale.

Keys

Key	Action
Scroll Up / **Scroll Down**	Scroll through albums / track list
Enter	Enter track list / Play album from selected track
Menu	Exit track list
Long **Menu**	Enter menu
Long **Menu**	Exit PictureFlow

Main Menu

Go to WPS. Leave PictureFlow and enter the while playing screen.

Playback Control. Control music playback from within the plugin.

Settings. Enter the settings menu.

Return. Exit menu.

Quit. Exit PictureFlow plugin.

Settings Menu

Show FPS. Displays frames per second on screen.

Spacing. The distance between the front edges of the side slides, i.e. changes the degree of overlap of the side slides. A larger number means less overlap. Scales with zoom.

Centre margin. The distance, in screen pixels, with zoom at 100, between the centre and side slides. Scales with zoom.

Number of slides. Sets the number of slides at each side, including the centre slide. Therefore if set to 4, there will be 3 slides on the left, the centre slide, and then 3 slides on the right.

Zoom. Changes the distance at which slides are rendered from the "camera".

Show album title. Allows setting the album title to be shown above or below the cover art, or not at all.

Resize Covers. Set whether to automatically resize the covers or to leave them at their original size.

Rebuild cache. Rebuild the PictureFlow cache. This is needed in order for PictureFlow to pick up new albums, and may occasionally be needed if albums are removed.

12.2.11. Plasma

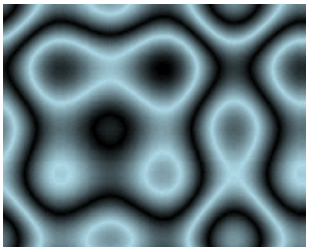


Figure 12.36.: Plasma

Plasma is a demo displaying a 80's style retro plasma effect.

Key	Action
Scroll Up / **Scroll Down**	Increase / decrease Frequency
Menu / Long **Menu**	Exit

12.2.12. Rocklife

This an implementation of J. H. Conway's Game of Life (see http://en.wikipedia.org/wiki/Conway%27s_Game_of_Life for a detailed description).

Rockbox can open files with a configuration description (`.cells` files). Just "play" such file and the game configuration stored in it will be loaded into this plugin.

A `.cells` file is a text file. A capital 'O' marks a live cell, a dot marks a dead cell, all other characters are ignored. Everything on a line starting with an exclamation sign (and including it) is a comment and is ignored.

Key	Action
Enter	Play/pause
Scroll Down	Change growth mode
Forward	Next generation
Rewind	Status (only when paused)
Menu	Exit

12.2.13. Snow

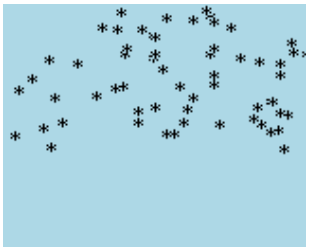


Figure 12.37.: Have you ever seen snow falling?

This demo replicates snow falling on your screen. If you love winter, you will love this demo. Or maybe not. Press **Menu** or Long **Menu** to quit.

12.2.14. Starfield

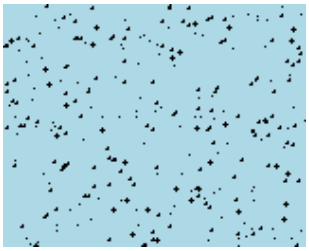


Figure 12.38.: Starfield

Starfield simulation (like the classic screensaver).

Key	Action
Forward / **Rewind**	Increase / decrease number of stars
Scroll Up / **Scroll Down**	Increase / decrease speed
Menu or Long **Menu**	Quit

12.2.15. VU meter

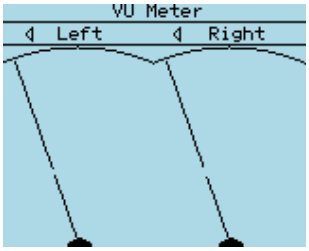


Figure 12.39.: VU-Meter

This is a VU meter, which displays the volume of the left and right audio channels. There are 3 types of meter selectable. The analogue meter is a classic needle style. The digital meter is modelled after LED volume displays, and the mini-meter option allows for the display of small meters in addition to the main display (as above). From the

settings menu the decay time for the meter (its memory), the meter type and the meter scale can be changed.

Key	Action
Long **Menu**	Save settings and quit
Play	Help
Menu	Settings
Scroll Up	Raise Volume
Scroll Down	Lower Volume

12.3. Viewers

Viewers are plugins which are associated with specific file extensions. They cannot be run directly but are started by "playing" the associated file. Viewers are stored in the `/.rockbox/rocks/viewers/` directory.

Note: Some viewer plugins can only be used by selecting the OPEN WITH... option from the CONTEXT MENU (see section 4.1.2 (page 23)).

Viewer Plugin	Associated filetype(s)	Context Menu only
Shortcuts	`.link`	
Chip-8 Emulator	`.ch8`	
Frotz	`.z1 - .z8`	
Image Viewer	`.bmp, .jpg, .jpeg, .png`	
Lua scripting language	`.lua`	
Midiplay	`.mid, .midi`	
MPEG Player	`.mpg, .mpeg, .mpv, .m2v`	
MP3 Encoder	`.wav`	x
Rockboy	`.gb, .gbc`	
Search	`.m3u, .m3u8`	x
Sort	`.*`	x
Text Viewer	`.txt,.nfo, .*`	
VBRfix	`.mp3`	x
ZXBox	`.tap, .tax, .sna, .z80`	
Shopping list	`.shopper`	

12.3.1. Shortcuts

The Shortcuts Plugin allows you to jump to places within the file browser without having to navigate there manually. The plugin works with `.link` files. A `.link` file is just a

text file with every line containing the name of the file or the directory you want to quickly jump to. All names should be full absolute names, i.e. they should start with a `/`. Directory names should also end with a `/`.

How to create `.link` files

You can use your favourite text editor to create a `.link` file on the PC an then copy the file to the player. Or you can use the context menu on either a file or a directory in the file browser tree, and use the "Add to shortcuts" menu option. This will append a line with the full name of the file or the directory to the `shortcuts.link` file in the root directory of the player. (The file will be created if it does not exist yet.) You can later rename the automatically created `shortcuts.link` file or move it to another directory if you wish. Subsequent calls of the context menu will create it again.

How to use `.link` files, i.e. jump to desired places

To use a `.link` file just "play" it from the file browser. This will show you a list with the entries in the file. Selecting one of them will then exit the plugin and leave you within the directory selected, or with the file selected in the file browser. You can then play the file or do with it whatever you want. The file will not be "played" automatically.

If the `.link` file contains only one entry no list will be shown, you will directly jump to that location. The file `shortcuts.link` in the root directory is an exception. After "playing" it, the list will be shown even if the file contains just one entry.

If the list you are seeing is from `shortcuts.link` in the root directory, you can delete the selected entry by pressing Long **Menu**. Deleting entries from other `.link` files is not possible.

Advanced Usage

Placing the line "#Display last path segments=n" (where n is a number) in the beginning of a `.link` file will leave just the last n segments of the entries when they are shown. For example, if n is chosen to be 1, then the entry `/MyMusic/collection/song.mp3` will be shown as `song.mp3`. This allows you to hide common path prefixes.

You can also provide a custom display name for each entry individually. To do so, append a tabulator character after the entry's path followed by your custom name. That name will then be used for showing the entry. For example:

Example

```
/MyMusic/collection/song.mp3<TAB>My favourite song!
```

12.3.2. Chip-8 Emulator

Chip8 is a kind of assembly language for a long-gone architecture. This plugin runs games written using the chip8 instructions. To start a game open a `.ch8` file in the File Browser

There are lots of tiny Chip8 games (usually only about 256 bytes to a couple of KB) which were made popular by the HP48 calculator's emulator for them. The original Chip8 had 64×32 pixel graphics, and the new superchip emulator supports 128×64 graphics.

The only problem is that they are based on a 4×4 keyboard, but since most games do not use all of the buttons, this can easily be worked around.

To do this, one may put a `.c8k` file with the same name as the original program which contains new key mappings (for `BLINKY.ch8`, one writes a `BLINKY.c8k` file). That `.c8k` file contains 16 characters describing the mapping from the Chip8 keyboard to the default key mapping (that way, several Chip8 keys can be pressed using only one Rockbox key). For example, a file containing the single line:

CODE

```
0122458469ABCDEF
```

would correspond to the following non-default mappings:

3 → 2, 6 → 8, 7 →4, 8 → 6.

The default keymappings are:

Chip8	Off	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Key	Long **Menu**		**Rewind**	**Forward**	**Menu**	**Enter**	**Rec**	**Play**	**Scroll Up**	**Scroll Down**							

Some places where can you can find `.ch8` files:

- The PluginChip8 page on www.rockbox.org has several attached: ☞PluginChip8
- Check out the HP48 chip games section: http://www.hpcalc.org/hp48/games/chip/
- PC emulator by the guy who wrote the HP48 emulator: http://www.pdc.kth.se/~lfo/chip8/CHIP8.htm
- Links to other chip8 emulators: http://www.zophar.net/chip8.html

12.3.3. Frotz

Frotz is a Z-Machine interpreter for playing Infocom's interactive fiction games, and newer games using the same format. To start a game open a `.z1 - .z8` file in the FILE BROWSER. Most modern games are in the `.z5` or `.z8` format but the older formats used by Infocom are supported.

Z-Machine games are text based and most depend heavily on typed commands. The virtual keyboard is used for text entry, both for typing entire lines and for typing single characters when the game requires single character input.

Sounds, pictures, colour and Unicode are not currently supported, but the interpreter informs the game of this and almost all games will adapt so that they are still playable. This port of Frotz attempts to be compliant with the Z-Machine Specification version 1.0.

Some places where you can find Z-Machine games, and information about interactive fiction:

- The Interactive Fiction Archive, where many free modern works can be downloaded: http://www.ifarchive.org/
- The specific folder on the if-archive containing Z-Machine games: http://www.ifarchive.org/indexes/if-archiveXgamesXzcode.html
- The Infocom homepage, with information about how to get the classic commercial Infocom games: http://www.csd.uwo.ca/Infocom/
- The Frotz homepage (for the original Unix port): http://frotz.sourceforge.net/
- A Beginner's Guide to Playing Interactive Fiction: http://www.microheaven.com/IFGuide/

Key	Action
Scroll Up	Display keyboard to enter text
Enter	Press enter
Menu	Open Frotz menu (not available at MORE prompts)
Long **Menu**	Quit

12.3.4. Image Viewer

This plugin opens image files from the File Browser to display them using Rockbox's greyscale library. Supported formats are as follows.

Format	File-extension(s)
BMP	`.bmp`
JPEG	`.jpg, .jpe, .jpeg`
PNG	`.png`
GIF	`.gif`

Note: When an audio file is playing the size of the image is limited as the decoding process needs to share memory with audio tracks. To be able to view a bigger file you may need to stop playback.

Key	Action
Rewind/ Forward/Play+ Scroll Up/ Play+ Scroll Down	Move around in zoomed in image
Play	Zoom in
Rec	Zoom out
Scroll Down	Next image in directory
Scroll Up	Previous image in directory
Enter	Show menu / Abort

The menu has the following entries.

Return. Returns you to the image

Toggle Slideshow Mode. Enables or disables the slideshow mode.

Change Slideshow Timeout. You can set the timeout for the slideshow between 1 second and 20 seconds.

Show Playback Menu. From the playback menu you can control the playback of the currently loaded playlist and change the volume of your player.

Quit. Quits the viewer and returns to the FILE BROWSER.

Note: Progressive scan and other unusual JPEG files are not supported, and will result in various "unsupported xx" messages. Processing could also fail if the image is too big to decode which will be explained by a respective message.

12.3.5. Lua scripting language

To quote from the Lua website (http://www.lua.org), Lua is a "powerful, fast, lightweight, embeddable scripting language". Select a `.lua` file in the FILE BROWSER to run it. For more information on programming in Lua, please see http://www.lua.org/manual/5.1/ and http://www.lua.org/pil/.

There are a few exceptions/additions to the Lua support in Rockbox:

No floating point support. The number type in Lua is usually float, however in the Rockbox implementation it is integer.

Non-supported libraries. The coroutine, debug and math libraries are not supported.

Partially-supported libraries. The os and package libraries are only partially supported.

Additional libraries. The bitlib library is integrated to support bitwise operators. See http://luaforge.net/projects/bitlib and http://lua-users.org/wiki/BitwiseOperators.

Documentation of the API is still a work in progress, and the API itself is not finalised. For the latest information, see ☞PluginLua.

Note: Please note that if a script does not provide a way to exit, then the only way to exit will be to reset the player.

12.3.6. Midiplay

To get MIDI file playback, a patchset is required. This file contains the instruments required to synthesize the music. A sample patchset is available through the wiki at ☞PluginMidiPlay, and needs to be extracted to the `.rockbox` directory in the root of your player. There should now be a `/.rockbox/patchset/` directory, with the patchset directory containing several `.pat` files and two `.cfg` files. Just select a MIDI file with either the `.mid` or `.midi` extension in the file browser to start playback.

Key	Action
Scroll Up/ Scroll Down	Volume up/ Volume down
Forward/ Rewind	Skip 3 seconds forward/ backward
Play	Pause/Resume playback
Long **Menu**	Stop playback and quit

12.3.7. MPEG Player

The Mpeg Player is a video player plugin capable of playing back MPEG-1 and MPEG-2 video streams with MPEG audio multiplexed into `.mpg` files.

To play a video file, you just select it in the Rockbox File Browser. If your file does not have the `.mpg` extension but is encoded in the supported format, you will need to use the Open With... context menu option and choose mpegplayer.

Key	Action
Play	Pause / Resume
Long **Play**	Stop
Scroll Up / **Scroll Down**	Adjust volume up / down
Rewind / **Forward**	Rewind / Fast Forward
	Open the MPEG Player menu

When a video file is selected, the Start Menu will be displayed, unless it is disabled via the Resume Options (see below). In the latter case the video will start playing immediately.

Start Menu

Play from beginning Resume information is discarded and the video plays from the start.

Resume at: mm:ss Resume video playback at stored resume time mm:ss (start of the video if no resume time is found).

Set start time A preview screen is presented consisting of a thumbnail preview and a progress bar where the user can select a start time by 'seeking' through the video. The video playback is started by pressing the select button.

Settings Open Settings submenu – see below.

Quit mpegplayer Exit the plugin.

Main Menu

Settings Open Settings submenu – see below.

Resume playback Return to playback screen.

Quit mpegplayer Exit the plugin.

Settings Menu

Display Options Open Display Options submenu – see below.

Audio Options Open Audio Options submenu – see below.

Resume Options (default: Start menu) Enable/disable the start menu.

Play Mode (default: Single) Set to All to play multiple `.mpg` files in the directory continuously.

Clear all resumes: x Discard all x resume points.

Display Options Menu

Dithering (default: off) Prevent banding effects in gradients by blending of colours. (only available on Sansa e200, Sansa c200 and Gigabeat F/X)

Display FPS (default: off) This option displays (once a second - if your video is full-screen this means it will get overwritten by the video and appear to flash once per second) the average number of frames decoded per second, the total number of frames skipped (see the Skip Frames option), the current time (in 100 Hz ticks) and the time the current frame is due to be displayed.

Limit FPS (default: on) With this option disabled, mpegplayer will display the video as fast as it can. Useful for benchmarking.

Skip frames (default: on) This option causes mpegplayer to attempt to maintain real-time playback by skipping the display of frames - but these frames are still decoded. Disabling this option can cause loss of A/V sync.

Backlight Brightness (default: Use setting) Choose brightness to use during video playback. Set to Use setting to use the Brightness setting.

Audio Options Menu

Tone Controls (default: force off) Use the bass and treble control settings or force them off.

Channel Modes (default: force off) Use the channel configuration setting or force Stereo mode.

Crossfeed (default: force off) Use the Crossfeed setting or force crossfeed off.

Equalizer (default: force off) Use the Equalizer setting or force the equalizer off.

Dithering (default: force off) Use the Dithering setting or force audio dithering off.

See this page in the Rockbox wiki for information on how to encode your videos to the supported format. ☞PluginMpegplayer

12.3.8. MP3 Encoder

This plugin encodes a `.wav` file to MP3 format. The supported input format is uncompressed, linear PCM with 16 bit per sample and a maximum of 2 channels. Allowed sample rates are 16, 22.05, 24, 32, 44.1 and 48 kHz. The user will be asked to select the desired output bitrate of the compressed MP3 file.

Select Bitrate The following bitrates can be selected: 64, 80, 96, 112, 128, 160, 192, 224, 256, 320 kbps.

Remark: Bitrates above 160 kbps cannot be used in MPEG 2 Layer 3 bitstreams. The encoder plugin automatically limits the output bitrate to 160 kbps for input files with a sample rate of 16, 22.05 or 24 kHz. The same limitation is valid for mono files.

The output `.mp3` file is written to the same path as the `.wav` file using the same filename. To use this plugin, open the CONTEXT MENU (see section 4.1.2 (page 23)) on a `.wav` file and select OPEN WITH... → MP3_ENCODER.

Note: The encoder will choose the appropriate bitstream format from the sample rate of the input file. The output bitstream format is MPEG 1 Layer 3 for 32, 44.1 and 48 kHz, and MPEG 2 Layer 3 for 16, 22.05 and 24 kHz. MPEG 2.5 Layer 3 is not supported.

12.3.9. Rockboy

Figure 12.40.: Rockboy

Rockboy is a Nintendo Game Boy and Game Boy Color emulator for Rockbox based on the gnuboy emulator. To start a game, open a ROM file saved as `.gb` or `.gbc` in the file browser.

Default keys

Key	Action
Rewind/ Forward/ Scroll Up/ Scroll Down	Direction keys
Play	A button
Rec	B button
Long **Play**	Start
Enter	Select
Hold switch	Cycle display scaling modes
Menu	Open Rockboy menu

Rockboy menu

Load Game... Loads a previously saved game.

Save Game... Saves your current state.

Options... Max Frameskip. Change frameskip setting to improve speed.

Sound. Toggle sound on or off.

Stats. Toggle showing fps and current frameskip.

Set Keys (BUGGY) Select this option to set a new keymapping.

Reset. Resets the Emulator.

Quit RockBoy. Quits the Rockboy plugin.

12.3.10. Search

This plugin can be used on playlists. It searches through the playlist that it opened on looking for any occurrences of the string entered by the user. The results of this search are saved to a new playlist, **search_results.m3u**, within the same directory as the original playlist.

12.3.11. Shopper

Shopper is a shopping list plugin which allows you to maintain reusable shopping lists.

12.3.12. Sort

This plugin takes a file and sorts it in ascending alphabetical order. Case is ignored. This is useful for ordering playlists generated by the Create Playlist menu option (see section 5.10 (page 43)).

12.3.13. Text Viewer

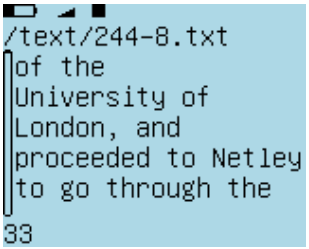


Figure 12.41.: Text Viewer

This is a Viewer for text files with word wrap. Just open a `.txt` or `.nfo` file to display it. The text viewer features controls to handle various styles of text formatting and has top-of-file and bottom-of-file buttons. You can view files without a `.txt` or `.nfo` extension by using *Open with* from the *Context Menu* (see section 4.1.2 (page 23)). You can also bookmark pages.

Default keys

Key	Action
Scroll Up	Scroll-up
Scroll Down	Scroll-down
Rewind	Top of file (Narrow mode) / One screen left (Wide mode)
Forward	Bottom of file (Narrow mode) / One screen right (Wide mode)
Play	Toggle autoscroll
Enter	Set/Reset bookmarks
Menu	Enter menu
Long **Menu**	Exit text viewer

Menu

Return Return to the file being viewed.

Viewer Options Change settings for the current file.

Encoding Set the codepage in the text viewer. Available settings: ISO-8859-1 (Latin 1). ISO-8859-7 (Greek), ISO-8859-8 (Hebrew), CP1251 (Cyrillic), ISO-8859-11 (Thai), CP1256 (Arabic), ISO-8859-9 (Turkish), ISO-8859-2 (Latin Extended), CP1250 (Central European), SJIS (Japanese), GB-2312 (Simple Chinese), KSX-1001 (Korean), BIG5 (Traditional Chinese), UTF-8 (Unicode), This setting only applies to the plugin and is independent from the DEFAULT CODEPAGE setting (see section 8.4 (page 65)).

Word Wrap Toggle word wrap mode.

On Break lines at the maximum column limit.

Off (Chop Words) Break lines at white space or hyphen.

Line Mode Change how lines are displayed.

Normal Break lines at newline characters.

Join Join lines together.

Expand Add a blank line at newlines. Useful for making paragraphs clearer in some book style text files.

Reflow Lines Justify the text.

Screens Per Page Set the number of screens per page. Available options are 1 to 5 screens per page.

Alignment Set the text alignment.

Right Set the text alignment to the right. (Useful for displaying right-to-left languages, such as Arabic or Hebrew)

Left Set the text alignment to the left.

Show Header Select whether to show the header. The header displays the file path.

No Do not display the header.

Yes Display the header.

Show Footer Select whether to show the footer. The footer dispays the page number.

No Do not display the footer.

Yes Display the footer.

Font Select the font to be used by the Text Viewer.

Show Statusbar Select whether to show the status bar. If you select a theme settings that the status bar does not display (see section 9 (page 74)), the status bar is not displayed even if you select YES.

No Do not display the status bar.

Yes Display the status bar.

Scroll Settings The scrolling settings submenu.

Horizontal Submenu for horizontal scrolling settings.

Scrollbar Toggle the horizontal scrollbar for the current mode. If the file fits on one screen, there is no scrollbar and this setting has no effect.

No Do not display the horizontal scroll bar.

Yes Display the horizontal scroll bar.

Scroll Mode Change the function of the "Left" and "Right" buttons.

Scroll by Screen Move to the previous/next screen.

Scroll by Column Move to the previous/next column.

Vertical Submenu for vertical scrolling settings.

Scrollbar Toggle the vertical scrollbar for the current mode. If the file fits on one screen, there is no scrollbar and this setting has no effect.

No Do not display the vertical scroll bar.

Yes Display the vertical scroll bar.

Scroll Mode Change the function of the "Scroll-up" and "Scroll-down" buttons.

Scroll by Page Scroll up or down one full screen.

Scroll by Line Scroll up or down one line.

Overlap Pages Set whether the last line from the previous screen is retained when scrolling pages.

No Do not retain previous line.

Yes Retain previous line.

Auto-scroll Speed Control the speed of auto-scrolling in number of lines per second. Available options are 1 to 10 lines per second. As an example, 4 will scroll the text at four lines per second.

Left/Right Key (Narrow mode) Change the function of the "Left" and "Right" buttons when the screen is in narrow mode (i.e. one screen per page).

Previous/Next Page Scroll up or down one full screen.

Top/Bottom Page Move to the top or bottom page.

Indent Spaces Set the number of spaces to indent the text when line mode is set to Reflow Lines. Available options are 0 to 5 spaces. If you select 0, a blank line is displayed as an indent.

Show Playback Menu Display the playback menu to allow control of the currently playing music without leaving the plugin.

Select Bookmark Select a saved bookmark. In the screenshot below, the "*" denotes the current page.

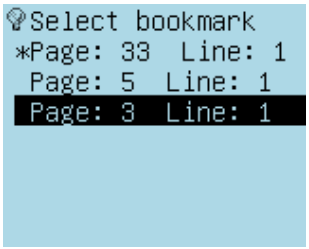


Figure 12.42.: The select bookmark menu

Global Settings Set the default settings for the text viewer. The setting items are the same as VIEWER OPTIONS. The global settings are stored in `.rockbox/rocks/viewers/viewer.dat`.

Quit Exits the plugin. The text viewer automatically stores its settings, the current position and bookmarks in `.rockbox/rocks/viewers/viewer_file.dat`.

Bookmarks

To add a bookmark, press . The bookmark will be displayed as shown below. To delete the bookmark press the same button again.

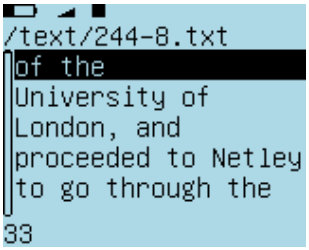


Figure 12.43.: A bookmark

12.3.14. Theme Remove

This plugin offers a way to remove a theme. Open the CONTEXT MENU (see section 4.1.2 (page 23)) upon a theme `.cfg` file and select OPEN WITH... → THEME_REMOVE. Some files are not removed regardless of the REMOVE OPTIONS such as `rockbox_default.wps` and the font file currently in use.

Theme Remove menu

Remove Theme. Selecting this will delete the files specified in the REMOVE OPTIONS. After a theme has been successfully removed, a log message is displayed listing which items have been deleted and which are being kept. Exit this screen by pressing any key. A file called `theme_remove_log.txt` is created in the root directory of your player listing all the changes.

Remove Options. This menu specifies which items are removed if REMOVE THEME is selected in the menu.

One of the following options can be chosen for each setting.

Ask for Removal. Selecting this option brings up a dialogue with two options: press **Enter**or **Play** to confirm deletion or any other key to cancel.

Remove if not Used. Selecting this option will remove the file automatically, if it is not used by another theme in the theme directory and not currently used.

Never Remove. Selecting this option will always skip deleting the file.

Always Remove. Selecting this option will remove the file with no regard to whether it's used by another theme or not.

Font. Specifies how the `.fnt` file belonging to a theme `.cfg` file is handled. If this option is set to REMOVE IF NOT USED, the fonts came from rockbox-fonts.zip will not be removed as themes may depend on those fonts.

WPS. Specifies how the `.wps` file belonging to a theme `.cfg` file is handled.

Statusbar Skin. Specifies how the `.sbs` file belonging to a theme `.cfg` file is handled.

Backdrop. Specifies how the backdrop `.bmp` file belonging to a theme `.cfg` file is handled.

Iconset. Specifies how the iconset `.bmp` file belonging to a theme `.cfg` file is handled.

Viewers Iconset. Specifies how the viewers iconset `.bmp` file belonging to a theme `.cfg` file is handled.

Create Log File. Setting this to NO prevents the log file from being created.

Quit. Exits this plugin.

12.3.15. VBRfix

This function scans a VBR (Variable Bitrate) MP3 file and updates/creates the Xing VBR header. The Xing header contains information about the VBR stream used to calculate average bit rate, time information and to more accurately fwd/rew in the stream. This function is especially useful when the playback of a file skips, fwd/rew does

not work correctly or the time display is incorrect. To use this plugin, open the CONTEXT MENU (see section 4.1.2 (page 23)) upon a `.mp3` file and select OPEN WITH. . . → VBRFIX.

Note: VBRfix can only run when music is turned off (since it uses the same memory as the player) and can take a while to complete if run on big files.

12.3.16. ZXBox

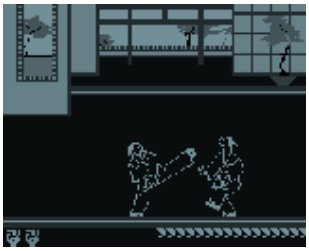


Figure 12.44.: ZXBox

ZXBox is a port of the "Spectemu" ZX Spectrum 48k emulator for Rockbox (☞project's homepage). To start a game open a tape file or snapshot saved as `.tap`, `.tzx`, `.z80` or `.sna` in the file browser.

Note: As ZXBox is a 48k emulator only loading of 48k z80 snapshots is possible.

Default keys

The emulator is set up for 5 different buttons: Up, Down, Left, Right and Jump/Fire. Each one of these can be mapped to one key of the Spectrum Keyboard or they can be used like a "Kempston" joystick. Per default the buttons, including an additional but fixed menu button, are assigned as follows:

Key	Action
Rewind/ Forward/ Scroll Up/ Scroll Down	Directional movement
Enter	Jump/Fire
Long **Menu**	Open ZXBox menu

ZXBox menu

Vkeyboard. This is a virtual keyboard representing the Spectrum keyboard. Controls are the same as in standard Rockbox, but you just press one key instead of entering a phrase.

Play/Pause Tape. Toggles playing of the tape (if it is loaded).

Save Quick Snapshot. Saves snapshot into `/.rockbox/zxboxq.z80`.

Load Quick Snapshot. Loads snapshot from `/.rockbox/zxboxq.z80`.

Save Snapshot. Saves a snapshot of the current state. You would enter the full path and desired name - for example `/games/zx/snapshots/chuckie.sna`. The snapshot format will be chosen after the extension you specified, per default `.z80` will be taken in case you leave it open.

Toggle Fast Mode. Toggles fastest possible emulation speed (no sound, maximum frameskip etc.). This is Useful when loading tapes with some specific loaders.

Options. Map Keys To Kempston. Controls whether the player's buttons should simulate a "Kempston" joystick or some assigned keys of the Spectrum keyboard.

Display Speed. Toggle displaying the emulation speed (in percent).

Invert Colours. Inverts the Spectrum colour palette, sometimes helps visibility.

Frameskip Sets the number of frames to skip before displaying one. With zero frameskip ZXBox tries to display 50 frames per second.

Sound. Turns sound on or off.

Volume. Controls volume of sound output.

Predefined Keymap Select one of the predefined keymaps. For example 2w90z means: map ZXBox's **Up** to 2, **Down** to w, **Left** to 9, **Right** to 0 and **Jump/Fire** to z. This example keymap is used in the "Chuckie Egg" game.

Custom Keymap This menu allows you to map one of the Spectrum keys accessible through the plugin's virtual keyboard to each one of the buttons.

Quit. Quits the emulator..

Hacking graphics

Due to ZXBox's simple (but fast) scaling to the screen by dropping lines and columns some games can become unplayable. It is possible to hack graphics to make them better visible with the help of an utility such as the "Spectrum Graphics Editor". Useful tools can be found at the "World of Spectrum" site (http://www.worldofspectrum.org/utilities.html).

12.4. Applications

12.4.1. Alarm Clock

This plugin is an alarm clock, which resumes a paused song at a given time.

Key configuration

Key	Action
Rewind / Forward	Switch between hours/minutes selection
Scroll Up / Scroll Down	Increase/Decrease hours/minutes
Enter	Set the alarm
Menu	Exit

Setting an alarm

First select a track and play it, then launch the "alarmclock" plugin. The plugin pauses the playback. Enter a 24h-time (e.g. 13:58) and set the alarm. Music playback will resume when the set time is reached.

12.4.2. Battery Benchmark

The Battery Benchmark plugin enables you to test your battery's performance whilst using your player normally. Results can be submitted to the ☞BatteryRuntime wiki page.

How it works

Once loaded, Battery Benchmark runs in the background recording various information about your battery to memory. A new point is written to memory every minute. Every time the disk is accessed for any reason (such as refilling the audio buffer, opening a directory or entering USB mode etc.) then the information in memory is written to disk. Once the memory becomes full (after many hours), then the data are written to disk anyway. This is done so that the data are not biased by excessive additional disk accesses. The file is written to the root directory of your player and is called `battery_bench.txt`. The plugin will continue to log info until:

- Another plugin is loaded.
- The player is shut down.
- The battery is empty.

Benchmarks can be resumed if you accidentally load a plugin, or turn off your player, so long as the log file `battery_bench.txt` is not deleted.

Information explained

At the top of the `battery_bench.txt` file is various information on how to use the plugin, followed by the data themselves.

Time This column reports the total time of operation of the player. It is not the time that you started the plug-in. If you have your player on for 5 minutes and then start the plugin, it will start measuring from 5 minutes.

Seconds The same as `Time`, except measured in seconds.

Level The percent level of the battery estimated by Rockbox, and not the actual battery level. The actual battery level can be seen from the `Voltage` column

Time Left This shows the time remaining until the battery is empty, again as estimated by Rockbox.

Voltage The battery voltage in mV at the moment the measurement was taken.

C This stands for Charger. An "A" in that column shows if the power adapter was attached to the unit at the time of the measurement.

U USB powered. Only for targets that support this. A "U" will indicate if the unit was using the USB port for power at the time of the measurement.

Usage

The log file can be used to tell you how long the battery lasted (with some limitations, see below), but it is most useful for graphing discharge curves in order to improve Rockbox's estimation of battery level and time remaining. The battery log (`battery_bench.txt`) is in CSV format (comma separated variables) and thus can be easily imported into a spreadsheet or similar program.

Limitations

As BATTERY BENCHMARK needs to write the data held in memory to disk in order to save them, it is possible that should Rockbox shut down due to low battery then there will not be enough power remaining to write the data to disk. Therefore all measurements since the previous save will be lost.

12.4.3. Calculator

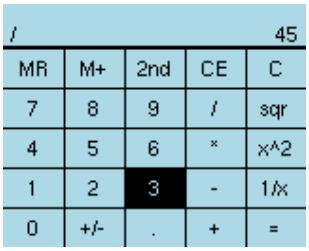


Figure 12.45.: Calculator

This is a simple scientific calculator for use on the player. It works like a standard calculator. Pressing the "1st" and "2nd" buttons will toggle between other available math functions.

Key	Action
Rewind/ Forward/ Scroll Up/ Scroll Down	Move around the keypad
Enter	Select a button
Menu	Delete last entered digit or clear after calculation
Play	Calculate
Long **Menu**	Quit

12.4.4. Calendar

Figure 12.46.: Calendar

This is a small and simple calendar application with memo saving function. Dots indicate dates with memos. The available memo types are: one off, yearly, monthly, and weekly memos.

You can select what day is first day of week by the setting First Day of Week in the menu.

Key	Action
Scroll Up / **Scroll Down**	Move the selector
Enter	Show memos for the selected day
Rewind/ **Forward**	Previous / Next week
Rec / **Play**	Previous / Next month
Long **Menu**	Quit

12.4.5. Chess Clock

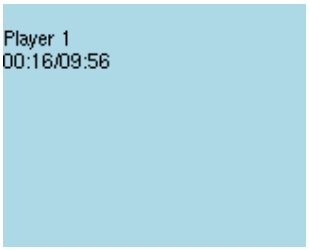


Figure 12.47.: Chess Clock

The chess clock plugin is designed to simulate a chess clock, but it can be used in any kind of game with up to ten players.

Setup

Key	Action
Scroll Up/ **Scroll Down**	Increase / decrease displayed Value
Enter	Move to next screen
Rec	Move to previous screen

- First enter the number of players (1–10)
- Then set the total game time in mm:ss
- Then the maximum round time is entered. For example, this could be used to play Scrabble for a maximum of 15 minutes each, with each round taking no longer than one minute.
- Done. Player 1 starts in paused mode.

While playing

The number of the current player is displayed on the top line. The time below is the time remaining for that round (and possibly also the total time left if different).

Keys are as follows:

Key	Action
Long **Menu**	Exit plugin
	Restart round for the current player
Play	Pause the time (press again to continue)
	Switch to next player
Scroll Down	Switch to previous player
Menu	Open menu

From the menu it is possible to delete a player, modify the round time for the current player or set the total time for the game. When the round time is up for a player the message "ROUND UP!" is shown (press NEXT to continue). When the total time is up for a player the message "TIME UP!"is shown. The player will then be removed from the timer.

12.4.6. Clock

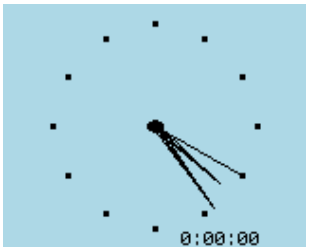


Figure 12.48.: Clock

This is a fully featured analogue and digital clock plugin.

Key configuration

Key	Action
Rewind / **Forward**	Cycle through modes
Scroll Up / **Scroll Down**	Cycle through skins
Menu	Main Menu
Enter	Start / Stop Counter
Long **Enter**	Reset Counter

Clock Menu

View Clock Exits the menu and returns to the current clock mode display.

Mode Selector Opens a menu from which you can select a clock mode to view.

Counter Settings Opens a menu from which you can adjust settings pertaining to the counter.

Mode Settings Opens a menu from which you can adjust settings pertaining to the current clock mode (analog, digital, binary).

General Settings Reset Settings Reset all settings to their default values.

Save Settings Save all settings to disk.

Show Counter Toggle Counter display.

Save Choose whether to disable automatic saving, saving to disk on exit, or saving to disk every settings change.

Backlight Choose whether to disable the backlight, use the user's timeout setting, or keep the backlight on.

Idle Poweroff Toggle Idle Poweroff.

Note: This setting is not saved to disk.

Help Opens a brief help screen with key mappings and functionality.

Credits Displays a credits roll.

Analog mode

Small, round, analog clock is displayed in the middle of the LCD. Time readout, if enabled, is displayed at the upper left. If Time readout is in 12-hour ("12h") mode, AM or PM will be displayed at the upper right. The Date readout, if enabled, is displayed

at the lower left. The Counter, if enabled, is displayed at the lower right. The second hand, if enabled, is displayed along with the hour and minute hands. Digit display, if enabled, places “12”, “3”, “6”, and “9” around the face of the clock in their respective positions.

Digital mode

An imitation of an LCD, this mode shows a Clock comprised of digital “segments”. The Date readout, if enabled, is displayed at the bottom, center. The Second readout, if in “Text” mode, is displayed at the top, center; if in “Bar” mode, is displayed as a progress bar at the top of the LCD; if in “Invert” mode, will invert the LCD left-to-right as the seconds pass (a fully-inverted LCD means the entire minute has passed). The Counter, if displayed, is shown at the upper left. The Blinking Colon, if enabled, blinks the colon once every second. 12-hour mode, if enabled, will display the time in a 12-hour format.

LCD mode

Based on the Digital Mode, the LCD mode is another imitation of an LCD. The settings available in this mode are exactly the same as Digital Mode, but they are independent of Digital Mode. For example, you can have the Date Readout enabled in Digital Mode and disabled in LCD Mode.

Fullscreen

A Fullscreen clock is displayed. Show Border, if enabled, will draw a small box at every hour position (1 to 12 inclusive). Invert Seconds, if enabled, will invert the LCD as the seconds pass. Second Hand, if enabled, will draw a second hand among the hour and minute hands.

Binary mode

This mode shows a Binary clock. The hour is displayed on the top line, the minute is displayed on the middle line, and the seconds are on the last line. Circle mode, if enabled, draws empty and full circles, instead of zeros and ones. For help on reading binary, please visit: http://en.wikipedia.org/wiki/Binary_numeral_system

Plain mode

This mode shows a “plain” clock in large text that takes up nearly the whole LCD.

12.4.7. Disk Tidy

Disk Tidy deletes junk files commonly left behind by Windows, Linux and OS X after connecting your player over USB. Select the files you want to delete in the “Files to Clean” menu and select “Start Cleaning” to begin the process. The settings are stored

in the plain text file `.rockbox/rocks/apps/disktidy.config` that is user-modifiable to allow custom entries to be added.

The asterisk character ("*") can be used as a wild-card which will match any string; however only the first asterisk will be recognised as a wild-card with any additional uses being taken as literal.

Warning: Be careful when you use custom entries as you could accidentally delete important files.

Available Options

All selects all Linux, OS X, and Windows files.

None deselects all file options.

Linux selects Linux files. Default files are `.dolphinview`, `.d3lphinview`, and `.Trash-*/`.

Windows selects Windows files. Default files are `Thumbs.db`, `$RECYCLE.BIN/`, `Desktop.ini`, `Recycled/` and `System Volume Information/`.

Mac selects OS X files. Default files are `._*`, `.DS_Store`, `.Spotlight-V100/` and `.Trashes/`.

Other selects additional files added to the configuration file by the user.

Key	Action
Menu	Exit / Abort

12.4.8. Keybox

Keybox is an encrypted password storage using the "Tiny Encryption Algorithm" with a key derived using md5.

Using Keybox

To get started, start up the plugin and select ENTER KEYBOX. The first time you enter Keybox you will be prompted for a master password and for confirmation of the master password. The master password is the password that you must use to access your stored passwords.

Once inside, enter the context menu by pressing Long **Enter**. From the context menu you can create new entries, delete entries and edit entries. Each entry has a "title", a "user name" and a "password".

Selecting Reset Keybox from the main menu will delete the current list of passwords and a new, empty list will be created the next time you select Enter Keybox after prompting for a new master password. Entries are automatically saved when the plugin is exited.

12.4.9. Lamp

Lamp is a simple plugin to use your player as a lamp (flashlight, torch). You get an empty screen with maximum brightness.

Key	Action
Scroll Up / **Scroll Down**	Change the brightness
Menu or Long **Menu**	Exit to menu

12.4.10. Lrcplayer

This plugin displays lyrics in `.lrc` files (and some other formats) synchronized with the song being played.

Supported file types

1. `.lrc`
2. `.lrc8`
3. `.snc`
4. `.txt`
5. id3v2 SYLT or USLT tags in mp3 files

`.lrc8` files are the same as `.lrc` files except that they are UTF8 encoded. The Lyrics3 tag is not supported.

Supported tags and formats for `.lrc` files

The following tags are supported:

```
[ti:title]
[ar:artist]
[offset:offset (msec)]
```

Each line should resemble one of the following:

```
[time tag]line
[time tag]...[time tag]line
[time tag]<word time tag>word<word time tag>...<word time tag>
```

The time tag must be in the form [mm:ss], [mm:ss.xx], or [mm:ss.xxx] where mm is minutes, ss is seconds, xx is tenth of milliseconds, and xxx is milliseconds. Any other tags and lines without time tags are ignored.

Location of lyrics files

The plugin checks the following directories for lyrics files. If no lyrics file is found and the audio file is a `.mp3`, it also checks for SYLT and USLT tags in the id3v2 tags.

1. The directory containing the audio file and its parent directories.
2. For each of the above directories, the plugin searches for a subdirectory named "Lyrics".
3. Finally, the plugin will search as above, but within a directory called "/Lyrics". The name of this directory can be customized, see below.

If the audio file currently playing is `/Music/Artist/Album/Title.mp3`, then the following files will be searched for, in this order. `.ext` is one of the supported extensions from the list above, and will be searched for in the same order as in that list.

```
/Music/Artist/Album/Title.ext
/Music/Artist/Title.ext
/Music/Title.ext
/Title.ext
/Music/Artist/Album/Lyrics/Title.ext
/Music/Artist/Lyrics/Title.ext
/Music/Lyrics/Title.ext
/Lyrics/Title.ext
/Lyrics/Musics/Artist/Album/Title.ext
/Lyrics/Musics/Artist/Title.ext
/Lyrics/Musics/Title.ext
/Lyrics/Title.ext
```

Controls

Key	Action
Scroll Up / **Scroll Down**	Volume up/down.
Rewind	Go to beginning of track, or if pressed while in the first seconds of a track, go to the previous track.
Long **Rewind**	Rewind in track.
Forward	Go to the next track.
Long **Forward**	Fast forward in track.
Play	Toggle play/pause.
Long **Play** or **Enter**	Exit the plugin.
Long **Enter**	Enter timetag editor.
Menu	Enter Lrcplayer Menu.

Lrcplayer Menu

Theme settings. Change theme related settings.

- **Show Statusbar.** Show / hide the statusbar.
- **Display Title.** Show / hide the track title.
- **Display Time.** Show / hide the current time.
- **Backlight Force On.** Do not turn off the backlight while displaying the lyrics.

Display Settings. Change how the lyrics are displayed.

- **Wrap.** Breaks lines at white space.
- **Wipe.** Wipes the text.
- **Alignment.** Align text to the left, centre, or right.
- **Activate Only Current Line.** Activate only the current line, or the current and previous lines.

Lyrics Settings. Change how the lyrics files are loaded.

- **Encoding.** Sets the codepage used in the plugin.
- **Read ID3 tag.** Read lyrics from id3 tags in mp3 files.
- **Lrc Directory.** Set the directory where lyrics files are stored, must be a maximum of 63 bytes.

Playback Control. Show the playback control menu.

Time Offset. Set an offset for the time tags for the lyrics currently in use.

Timetag Editor. Enter the timetag editor.

Quit. Exit the plugin.

Editing the time tags

The display time for each line can be changed with the timetag editor. Selecting a line changes its time to the current position of the track. To set a specific time or to adjust the time, press Long **Enter** to bring up a screen to adjust the time. Changes will be saved automatically when the song is changed. Editing words in lyrics is not supported.

12.4.11. md5sum

Open a file, a directory or just launch it from the plugin menu to create an md5sum of the file, the directory's contents or the whole filesystem. If the file's extension is `.md5` or `.md5sum`, it will check the md5 sums in the file instead. If the file's extension is .md5list it will compute md5 sums for all the files listed.

12.4.12. Metronome

This plugin can be used as a metronome to keep time during music practice. Adjust the tempo through the interface or by tapping it out on the appropriate button.

Key	Action
Long **Menu**	Exit plugin
Menu	Stop
Long **Enter**	Start
Enter	Tap tempo
Rewind / **Forward**	Adjust tempo
Scroll Up / **Scroll Down**	Adjust volume

12.4.13. Pitch Detector

With the Pitch Detector, you can play a note on a musical instrument, and the plugin will tell you what note it is (e.g. A, A#, B, etc.) The frequency will also be displayed. This may be a great assistance when tuning a musical instrument.

Key	Action
Menu	Open menu
Long **Menu**	Exit

12.4.14. Random Folder Advance Configuration

This plugin is used to configure the folders which will be considered when the Auto-Change Directory feature is set to RANDOM.

Menu

Generate Folder List Generates a list of all folders found on the player. You can filter the directories which are scanned by creating a file called `/.rockbox/folder_advance_dir.txt`. Only the directories in this file and any contained directories will be scanned. You can have up to 10 directories ignored by the scan by placing a minus sign before them in the list (i.e. `-/CDs` will cause everything in the `/CDs` directory to be ignored.). If you just want `/CDs` to be ignored but want to include the folders within it you need to have both `-/CDs` and `CDs` as entries.

Edit Folder List Enter the folder list editor

Export List To Textfile Exports the list to `/.rockbox/folder_advance_list.txt`

Import List From Textfile Imports the list from `/.rockbox/folder_advance_list.txt`

Play Shuffled Starts playback with the selected directories in random order. Tracks within a directory will be played in normal order. The plugin will exit after starting playback.

Quit

Folder List Editor Keys

Key	Action
Enter	Delete selected folder
Long **Enter**	Bring up the context menu which allows you to remove the selected folder or its entire folder tree
Menu	Exit

12.4.15. Resistor Calculator

Figure 12.49.: Resistor calculator

The resistor calculator is a plugin that works in 3 modes:

Colour to Resistance

In Colour to Resistance mode, use the menus to select the colours of the bands of a resistor which you would like to know the resistance of.

Resistance to Colour

In Resistance to Colour mode, use the menus to select the unit that you would like to use (choose from Ohms, Kiloohms, Megaohms), and use the on-screen keyboard to input the value of the resistor that you would like to know the colour code of. The colour codes are presented textually.

LED resistance

LED resistance calculator is used to determine the resistor necessary to light an LED safely at a given voltage. First, select the voltage that the LED will use (the first option is the most common and a safe bet), and the current that it will draw (likewise with the first option). Then, use the onscreen keyboard to type in the supply voltage and, if selected, the custom forward current. This function produces safe estimates, but use your own judgement when using these output values. Power rating and displayed resistance are rounded up to the nearest common value.

12.4.16. Stats

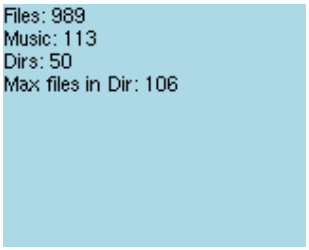


Figure 12.50.: The stats-plugin

The stats plugin counts the directories and files (the total number as well as the number of audio, playlist, image and video files) on your player. Press **Menu** or Long **Menu** to abort counting and exit the plugin. Press it again to quit after counting has finished.

12.4.17. Stopwatch

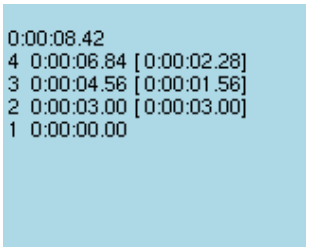


Figure 12.51.: Stopwatch

A simple stopwatch program with support for saving times.

Key	Action
Long **Menu**	Quit Plugin
Play	Start / stop
Rewind	Reset timer (only when timer is stopped)
Forward	Take lap time
Scroll Up / **Scroll Down**	Scroll through lap times

12.4.18. Text Editor

This plugin allows you to view and edit simple text documents on your DAP. You can view files by using OPEN WITH from the CONTEXT MENU (see section 4.1.2 (page 23)).

Usage

If you start the Text Editor from the plugin browser you will be greeted with a blank screen. When started from the OPEN WITH menu item your file should be shown on the screen. You can now edit the file. The Text Editor is line based. This means you can edit one line at a time using the VIRTUAL KEYBOARD (see section 4.1.3 (page 25)).

- Move the selection bar to the line you want to edit.
- Edit the highlighted text line or insert a new one using the Item Menu.
- When finished editing exit the Text Editor. You'll be shown a list of save options.

Note: When you have not changed the file the Text Editor will quit immediately.

Key	Action
Enter	Edit Line / Select Character
Menu	Exit / Abort Editing
Long **Menu**	Show Item Menu
Long **Enter**	Delete Line

13. Advanced Topics

13.1. Customising the User Interface

13.1.1. Customising The Main Menu

It is possible to customise the main menu, i.e. to reorder or to hide some of its items (only the main menu can be customised, submenus can not). To accomplish this, load a `.cfg` file (as described in section 13.3 (page 160)) containing the following line: `root menu order:items`, where "items" is a comma separated list (no spaces around the commas!) of the following words: `bookmarks`, `files`, `database`, `wps`, `settings`, `recording`, `radio`, `playlists`, `plugins`, `system_menu`, `shortcuts`. Each of the words, if it occurs in the list, activates the appropriate item in the main menu. The order of the items is given by the order of the words in the list. The items whose words do not occur in the list will be hidden, with one exception: the menu item Settings will be shown even if its word is not in the list (it is added as the last item then).

The following configuration example will change the main menu so that it will contain only the items for the file browser, for resuming the playback, and for changing the settings (the latter will be added automatically).

Example

```
root menu order:files,wps
```

To reset the menu items to the default, use `root menu order:-` (i.e. use a hyphen instead of "items").

This configuration entry can only be created and edited with a text editor. It is not possible to change this setting via the settings menu.

13.1.2. Getting Extras

Rockbox supports custom fonts. A collection of fonts is available for download in the font package at http://www.rockbox.org/daily.shtml.

13.1.3. Loading Fonts

Rockbox can load fonts dynamically. Simply copy the `.fnt` file to the player and "play" it in the File Browser. If you want a font to be loaded automatically every time you start up, it must be located in the `/.rockbox/fonts` directory and the filename must be at most 24 characters long. You can browse the fonts in `/.rockbox/fonts` under Settings → Theme Settings → Font in the Main Menu.

Note: Advanced Users Only: Any BDF font should be usable with Rockbox. To convert from `.bdf` to `.fnt`, use the `convbdf` tool. This tool can be found in the `tools` directory of the Rockbox source code. See ☞CreateFonts#ConvBdf for more details. Or just run `convbdf` without any parameters to see the possible options.

13.1.4. Loading Languages

Rockbox can load language files at runtime. Simply copy the `.lng` file *(do not use the .lang file)* to the player and "play" it in the Rockbox directory browser or select SETTINGS → GENERAL SETTINGS → LANGUAGE from the MAIN MENU.

Note: If you want a language to be loaded automatically every time you start up, it must be located in the `/.rockbox/langs` directory and the filename must be a maximum of 24 characters long.

If your language is not yet supported and you want to write your own language file find the instructions on the Rockbox website: ☞LangFiles

13.1.5. Loading Backdrops

Rockbox supports showing an image as a backdrop in the FILE BROWSER and the menus. The backdrop image must be a `.bmp` file of the exact same dimensions as the display in your player (160×128×2 with the last number giving the colour depth in bits). To use an image as a backdrop browse to it in the FILE BROWSER and open the CONTEXT MENU (see section 4.1.2 (page 23)) on it and select the option SET AS BACKDROP. If you want rockbox to remember your backdrop the next time you start your player the backdrop must be placed in the `/.rockbox/backdrops` directory.

13.1.6. UI Viewport

By default, the UI is drawn on the whole screen. This can be changed so that the UI is confined to a specific area of the screen, by use of a UI viewport. This is done by adding the following line to the `.cfg` file for a theme:

```
ui viewport:  X,Y,[width],[height],[font],[fgshade],[bgshade]
```

Only the first two parameters *have* to be specified, the others can be omitted using '-' as a placeholder. The syntax is very similar to WPS viewports (see section 13.2.2 (page 155)). Briefly:

- 'fgshade' and 'bgshade' are numbers in the range 0 (= black) to 3 (= white).
- 'font' is a number: 0 is the built-in system font, 1 is the user-selected font.

Example

```
ui viewport: 15,20,100,150,-,-,-
```

This displays the menu starting at 15px from the left of the screen and 20px from the top of the screen. It is 100px wide and 150px high. The font and the foreground/background shades are defined in the theme `.cfg` file or in the Theme Settings menu.

13.2. Configuring the Theme

13.2.1. Themeing – General Info

There are various different aspects of the Rockbox interface that can be themed – the WPS or While Playing Screen, the FMS or FM Screen (if the player has a tuner), and the SBS or Base Skin. The WPS is the name used to describe the information displayed on the player's screen whilst an audio track is being played, the FMS is the screen shown while listening to the radio, and the SBS lets you specify a base skin that is shown in the menus and browsers, as well as the WPS and FMS. The SBS also allows you to control certain aspects of the appearance of the menus/browsers. There are a number of themes included in Rockbox, and you can load one of these at any time by selecting it in Settings → Theme Settings → Browse Theme Files. It is also possible to set individual items of a theme from within the Settings → Theme Settings menu.

13.2.2. Themes – Create Your Own

The theme files are simple text files, and can be created (or edited) in your favourite text editor. To make sure non-English characters display correctly in your theme you must save the theme files with UTF-8 character encoding. This can be done in most editors, for example Notepad in Windows 2000 or XP (but not in 9x/ME) can do this.

Files Locations: Each different "themeable" aspect requires its own file – WPS files have the extension `.wps`, FM screen files have the extension `.fms`, and SBS files have the extension `.sbs`. The main theme file has the extension `.cfg`. All files should have the same name.

The theme `.cfg` file should be placed in the `/.rockbox/themes` directory, while the `.wps`, `.fms` and `.sbs` files should be placed in the `/.rockbox/wps` directory. Any images used by the theme should be placed in a subdirectory of `/.rockbox/wps` with the same name as the theme, e.g. if the theme files are named `mytheme.wps`, `mytheme.sbs` etc., then the images should be placed in `/.rockbox/wps/mytheme`.

All full list of the available tags are given in appendix section D (page 173); some of the more powerful concepts in theme design are discussed below.

- All characters not preceded by % are displayed as typed.
- Lines beginning with # are comments and will be ignored.

Note: Keep in mind that your player's resolution is 160×128×2 (with the last number giving the colour depth in bits) when designing your own WPS, or if you use a WPS designed for another target.

Viewports

By default, a viewport filling the whole screen contains all the elements defined in each theme file. The elements in this viewport are displayed with the same background/ foreground shades and the text is rendered in the same font as in the main menu. To change this behaviour a custom viewport can be defined. A viewport is a rectangular window on the screen with its own foreground/background shades. This window also has variable dimensions. To define a viewport a line starting `%V(...` has to be present in the theme file. The full syntax will be explained later in this section. All elements placed before the line defining a viewport are displayed in the default viewport. Elements defined after a viewport declaration are drawn within that viewport. Loading images (see Appendix section D.21 (page 182)) should be done within the default viewport. A viewport ends either with the end of the file, or with the next viewport declaration line. Viewports sharing the same coordinates and dimensions cannot be displayed at the same time. Viewports cannot be layered *transparently* over one another. Subsequent viewports will be drawn over any other viewports already drawn onto that area of the screen.

Viewport Declaration Syntax

`%V(x,y,[width],[height],[font]) %Vf([fgshade]) %Vb([bgshade])`

- %Vf and %Vb set the foreground and background shade of grey respectively.
- 'fgshade' and 'bgshade' are numbers in the range 0 (= black) to 3 (= white).
- 'font' is a number: 0 is the built-in system font, 1 is the current menu font, and 2-9 are additional skin loaded fonts (see section 13.2.4 (page 157)).
- Only the coordinates *have* to be specified. Leaving the other definitions blank will set them to their default values.

Note: The correct number of commas with hyphens in blank fields are still needed.

EXAMPLE

```
%V(12,20,-,-,1) %Vf(0) %Vb(3)
%sThis viewport is displayed permanently. It starts 12px from the left and
%s20px from the top of the screen, and fills the rest of the screen from
%sthat point. The lines will scroll if this text does not fit in the viewport.
%sThe user font is used, the foreground colour is set to black and the
%sbackground is set to white.
```

Viewport definition	Default value
width/height	remaining part of screen
font	user defined
shade	black foreground on white background

Viewport Line Text Styles

Tag	Description
`%Vs(mode[,param])`	Set the viewport text style to 'mode' from this point forward

Mode can be the following:

Mode	Description
clear	Restore the default style
invert	Draw lines inverted
color	Draw the text coloured by the value given in 'param'. Functionally equivalent to using the %Vf() tag

Conditional Viewports

Any viewport can be displayed either permanently or conditionally. Defining a viewport as `%V(...` will display it permanently.

- `%Vl('identifier',...)` This tag preloads a viewport for later display. 'identifier' is a single lowercase letter (a-z) and the '...' parameters use the same logic as the `%V` tag explained above.
- `%Vd('identifier')` Display the 'identifier' viewport.

Viewports can share identifiers so that you can display multiple viewports with one %Vd line.

Example

```
%?C<%Vd(a)|%Vd(b)>
%Vl(a,10,10,50,50,-)
%Cl(0,0,50,50,c,c)
%Cd
%Vl(a,0,70,70,14,1)
%s%acThere you have it: Album art.
%Vl(b,20,14,50,14,1)
%t(1)%acWarning:;%t(.1)
%Vl(b,20,30,50,50,1)
%sNo album art found
%scheck your filenames.
```

This example checks for album art. Album art will be displayed in viewport 'a', if it is found. Otherwise a flashing warning will be displayed in viewport 'b'.

Note: The tag to display conditional viewports must come before the tag to preload the viewport in the `.wps` file.

13.2.3. Info Viewport (SBS only)

As mentioned above, it is possible to set a UI viewport via the theme `.cfg` file. It is also possible to set the UI viewport through the SBS file, and to conditionally select different UI viewports.

- `%Vi('label',...)` This viewport is used as Custom UI Viewport in the case that the theme doesn't have a ui viewport set in the theme `.cfg` file. Having this is strongly recommended since it makes you able to use the SBS with other themes. If label is set this viewport can be selectivly used as the Info Viewport using the %VI tag. The '...' parameters use the same logic as the `%V` tag explained above.
- `%VI('label')` Set the Info Viewport to use the viewport called label, as declared with the previous tag.

13.2.4. Additional Fonts

Additional fonts can be loaded within each screen file to be used in that screen. In this way not only can you have different fonts between e.g. the menu and the WPS, but you can use multiple fonts in each of the individual screens.

`%Fl('id',filename,glyphs)`

- 'id' is the number you want to use in viewport declarations, 0 and 1 are reserved and so can't be used.
- 'filename' is the font filename to load. Fonts should be stored in `/.rockbox/fonts/`
- 'glyphs' is an optional specification of how many unique glyphs to store in memory. Default is from the system setting GLYPHS TO LOAD.

An example would be: `%Fl(2,12-Nimbus.fnt,100)`

Conditional Tags

If/else: Syntax: `%?xx<true|false>`

If the tag specified by "`xx`" has a value, the text between the "`<`" and the "`|`" is displayed (the true part), else the text between the "`|`" and the "`>`" is displayed (the false part). The else part is optional, so the "`|`" does not have to be specified

if no else part is desired. The conditionals nest, so the text in the if and else part can contain all % commands, including conditionals.

Enumerations: Syntax: `%?xx<alt1|alt2|alt3|...|else>`

For tags with multiple values, like Play status, the conditional can hold a list of alternatives, one for each value the tag can have. Example enumeration:

EXAMPLE

```
%?mp<Stop|Play|Pause|Ffwd|Rew>
```

The last else part is optional, and will be displayed if the tag has no value. The WPS parser will always display the last part if the tag has no value, or if the list of alternatives is too short.

Next Song Info

You can display information about the next song – the song that is about to play after the one currently playing (unless you change the plan).

If you use the upper-case versions of the three tags: `F`, `I` and `D`, they will instead refer to the next song instead of the current one. Example: `%Ig` is the genre name used in the next song and `%Ff` is the mp3 frequency.

Note: The next song information *will not* be available at all times, but will most likely be available at the end of a song. We suggest you use the conditional display tag a lot when displaying information about the next song!

Alternating Sublines

It is possible to group items on each line into 2 or more groups or "sublines". Each subline will be displayed in succession on the line for a specified time, alternating continuously through each defined subline.

Items on a line are broken into sublines with the semicolon '`;`' character. The display time for each subline defaults to 2 seconds unless modified by using the '`%t`' tag to specify an alternate time (in seconds and optional tenths of a second) for the subline to be displayed.

Subline related special characters and tags:

; Split items on a line into separate sublines

%t Set the subline display time. The '`%t`' is followed by either integer seconds (`%t5`), or seconds and tenths of a second within () e.g. (`%t(3.5)`).

Each alternating subline can still be optionally scrolled while it is being displayed, and scrollable formats can be displayed on the same line with non-scrollable formats (such as track elapsed time) as long as they are separated into different sublines. Example subline definition:

Example

```
%s%t(4)%ia;%s%it;%t(3)%pc %pr : Display id3 artist for 4 seconds,
                              Display id3 title for 2 seconds,
                              Display current and remaining track time
                              for 3 seconds,
                              repeat...
```

Conditionals can be used with sublines to display a different set and/or number of sublines on the line depending on the evaluation of the conditional. Example subline with conditionals:

Example

```
%?it<%t(8)%s%it|%s%fn>;%?ia<%t(3)%s%ia|%t(0)>
```

The format above will do two different things depending if ID3 tags are present. If the ID3 artist and title are present:

- Display id3 title for 8 seconds,
- Display id3 artist for 3 seconds,
- repeat...

If the ID3 artist and title are not present:

- Display the filename continuously.

Note that by using a subline display time of 0 in one branch of a conditional, a subline can be skipped (not displayed) when that condition is met.

Using Images

You can have as many as 52 images in your WPS. There are various ways of displaying images:

1. Load and always show the image, using the `%x` tag
2. Preload the image with `%xl` and show it with `%xd`. This way you can have your images displayed conditionally.
3. Load an image and show as backdrop using the `%X` tag. The image must be of the same exact dimensions as your display.

Example on background image use:

Example

```
%X(background.bmp)
```

The image with filename `background.bmp` is loaded and used in the WPS.

Example on bitmap preloading and use:

Example
```
%x(a,static_icon.bmp,50,50)
%xl(b,rep_off.bmp,16,64)
%xl(c,rep_all.bmp,16,64)
%xl(d,rep_one.bmp,16,64)
%xl(e,rep_shuffle.bmp,16,64)
%?mm<%xd(b)|%xd(c)|%xd(d)|%xd(e)>
```

Four images at the same x and y position are preloaded in the example. Which image to display is determined by the `%mm` tag (the repeat mode).

Example File

Example
```
%s%?in<%in - >%?it<%it|%fn> %?ia<[%ia%?id<, %id>]>
%pb%pc/%pt
```

That is, "tracknum – title [artist, album]", where most fields are only displayed if available. Could also be rendered as "filename" or "tracknum – title [artist]".

13.3. Managing Rockbox Settings

13.3.1. Introduction to `.cfg` Files

Rockbox allows users to store and load multiple settings through the use of configuration files. A configuration file is simply a text file with the extension `.cfg`.

A configuration file may reside anywhere on the disk. Multiple configuration files are permitted. So, for example, you could have a `car.cfg` file for the settings that you use while playing your jukebox in your car, and a `headphones.cfg` file to store the settings that you use while listening to your player through headphones.

See section 13.3.2 (page 160) below for an explanation of the format for configuration files. See section 13.3.3 (page 161) for an explanation of how to create, edit and load configuration files.

13.3.2. Specifications for `.cfg` Files

The Rockbox configuration file is a plain text file, so once you use the Save .cfg file option to create the file, you can edit the file on your computer using any text editor program. See Appendix section E (page 190) for available settings. Configuration files use the following formatting rules:

1. Each setting must be on a separate line.
2. Each line has the format "setting: value".
3. Values must be within the ranges specified in this manual for each setting.

4. Lines starting with # are ignored. This lets you write comments into your configuration files.

Example of a configuration file:

Example

```
volume: 70
bass: 11
treble: 12
balance: 0
time format: 12hour
volume display: numeric
show files: supported
wps: /.rockbox/car.wps
lang: /.rockbox/afrikaans.lng
```

Note: As you can see from the example, configuration files do not need to contain all of the Rockbox options. You can create configuration files that change only certain settings. So, for example, suppose you typically use the player at one volume in the car, and another when using headphones. Further, suppose you like to use an inverse LCD when you are in the car, and a regular LCD setting when you are using headphones. You could create configuration files that control only the volume and LCD settings. Create a few different files with different settings, give each file a different name (such as `car.cfg`, `headphones.cfg`, etc.), and you can then use the Browse .cfg files option to quickly change settings.

A special case configuration file can be used to force a particular setting or settings every time Rockbox starts up (e.g. to set the volume to a safe level). Format a new configuration file as above with the required setting(s) and save it into the `/.rockbox` directory with the filename `fixed.cfg`.

13.3.3. The Manage Settings menu

The Manage Settings menu can be found in the Main Menu. The Manage Settings menu allows you to save and load `.cfg` files.

Browse .cfg Files Opens the File Browser in the `/.rockbox` directory and displays all `.cfg` (configuration) files. Selecting a `.cfg` file will cause Rockbox to load the settings contained in that file. Pressing **Menu** will exit back to the Manage Settings menu. See the Write .cfg files option on the Manage Settings menu for details of how to save and edit a configuration file.

Reset Settings This wipes the saved settings in the player and resets all settings to their default values.

Save .cfg File This option writes a `.cfg` file to your player's disk. The configuration file has the `.cfg` extension and is used to store all of the user settings that are described throughout this manual.

Hint: Use the Save .cfg File feature (Main Menu → Manage Settings) to save the current settings, then use a text editor to customize the settings file. See Appendix section E (page 190) for the full reference of available options.

Save Sound Settings This option writes a `.cfg` file to your player's disk. The configuration file has the `.cfg` extension and is used to store all of the sound related settings.

Save Theme Settings This option writes a `.cfg` file to your player's disk. The configuration file has the `.cfg` extension and is used to store all of the theme related settings.

13.4. Firmware Loading

13.4.1. Using ROLO (Rockbox Loader)

Rockbox is able to load and start another firmware file without rebooting. You just "play" a file with the extension This can be used to test new firmware versions without deleting your current version.

13.5. Optimising battery runtime

Rockbox offers a lot of settings that have high impact on the battery runtime of your player. The largest power savings can be achieved through disabling unneeded hardware components – for some of those there are settings available. Another area of savings is avoiding or reducing CPU boosting through disabling computing intense features (e.g. sound processing) or using effective audio codecs. The following provides a short overview of the most relevant settings and rules of thumb.

13.5.1. Display backlight

The active backlight consumes a lot of power. Therefore choose a setting that disables the backlight after timeout (for setting Backlight see section 8.4 (page 63)). Avoid to have the backlight enabled all the time.

13.5.2. Anti-Skip Buffer

Having a large anti-skip buffer tends to use more power, and may reduce your battery life. It is recommended to always use the lowest possible setting that allows correct and continuous playback (see section 7.5 (page 55)).

13.5.3. Replaygain

Replaygain is a post processing that equalises the playback volume of audio files to the same perceived loudness. This post processing applies a factor to each single PCM

sample and is therefore consuming additional CPU time. If you want to achieve some (minor) savings in runtime, switch this feature off (see section 7.9 (page 57)).

13.5.4. Peak Meter

The peak meter is a feature of the While Playing Screen and will be updated with a high framerate. Depending on your player this might result in a high CPU load. To save battery runtime you should switch this feature off (see section 4.3.2 (page 29)).

13.5.5. Audio format and bitrate

In general the fastest decoding audio format will be the best in terms of battery runtime on your player. An overview of different codec's performance on different players can be found at ☞CodecPerformanceComparison.

Your target uses a hard disk which consumes a large amount of power while spinning – up to several hundred mA. The less often the hard disk needs to spin up for buffering and the shorter the buffering duration is, the lower is the power consumption. Therefore the bitrate of the audio files does have an impact on the battery runtime as well. Lower bitrate audio files will result in longer battery runtime.

Please do not re-encode any existing audio files from one lossy format to another based upon the above mentioned. This will reduce the audio quality. If you have the choice, select the best suiting codec when encoding the original source material.

13.5.6. Sound settings

In general all kinds of sound processing will need more CPU time and therefore consume more power. The less sound processing you use, the better it is for the battery runtime (for options see section 6 (page 47)).

A. File formats

A.1. Supported file formats

Icon	File Type	Extension	Action when selected
	Directory	*none*	Enter the directory
	Audio file	*various* (see B.1)	Start playing the file and show the WPS
	Bookmark	`.bmark`	Display all bookmarks for an audio file
	Game of Life	`.cells`	Show the configuration with the "Rocklife" plugin
	Configuration File	`.cfg`	Load the settings file
	Chip8 game	`.ch8`	Play the Chip8 game
	Cuesheet	`.cue`	View the cuesheet file
	FM Presets	`.fmr`	Load the FM Presets (previous are discarded)
	Font	`.fnt`	Change the user interface font to this one
	Image	`.jpg`	View the JPEG image
	Link	`.link`	Display list of target files and directories; selecting one jumps to the target. See section 12.3.1 (page 119).
	Language File	`.lng`	Load the language file
	Playlist	`.m3u`, `.m3u8`	Load the playlist and start playing the first file
	Video	`.mpg`, `.mpeg`, `.mpv`, `.m2v`	Play the MPEG1/2 video
	Plugin	`.rock`	Start the plugin
	Text File	`.txt`	Display the text file using the text viewer plugin
	Voice file	`.voice`	Allow Rockbox to speak menus
	While Playing Screen	`.wps`	Load the new WPS display configuration

B. Audio and metadata formats

B.1. Supported audio formats

B.1.1. Lossy Codecs

Format	Extension	Notes
ATSC A/52 (AC3)	.a52, .ac3, .rm, .ra, .rmvb	Supports downmixing for playback of 5.1 streams in stereo
ADX	.adx	Encrypted ADX is not supported.
Advanced Audio Coding	.m4a, .m4b, .mp4, .rm, .ra, .rmvb	Supports AAC-LC, -HEv1, and -HEv2 profiles
MPEG audio	.mpa, .mp1, .mp2, .mp3	MPEG 1/2/2.5 Layer 1/2/3
Musepack	.mpc	Supports SV7 and SV8 in mono/stereo
OGG/Vorbis	.ogg, .oga	Playback of some old "floor 0" files may fail on low memory targets. Files with album art larger than available RAM will be skipped. Chained Ogg files are not supported.
Sony Audio	.oma, .aa3, .rm, .ra, .rmvb	Supports ATRAC3
RealAudio	.rm, .ra, .rmvb	Supports RealAudio G2 (Cook)
Speex	.spx	
Dialogic telephony type	.vox	
Windows Media Audio Standard	.wma, .wmv, .asf	
Windows Media Audio Professional	.wma, .wmv, .asf	

Note: AAC-HE profiles might not play in realtime on all devices due to CPU perfor-

mance requirements.

B.1.2. Lossless Codecs

Format	Extension	Notes
Audio Interchange File Format	`.aif`, `.aiff`	Linear PCM 8/16/24/32 bit, IEEE float 32/64 bit, ITU-T G.711 a-law/μ-law, QuickTime IMA ADPCM
Monkey's Audio	`.ape`, `.mac`	
Sun Audio	`.au`, `.snd`	Linear PCM 8/16/24/32 bit, IEEE float 32/64 bit, ITU-T G.711 a-law/μ-law
Free Lossless Audio	`.flac`	Supports multichannel playback including downmixing to stereo.
Apple Lossless	`.m4a`, `.mp4`	
Shorten	`.shn`	Seeking not supported.
True Audio	`.tta`	
Wave64	`.w64`	Supports same formats as Waveform audio format.
Waveform audio format	`.wav`	Linear PCM 8/16/24/32 bit, IEEE float 32/64 bit, ITU-T G.711 a-law/μ-law, Microsoft ADPCM, Intel DVI ADPCM (IMA ADPCM) 2/3/4/5 bit, Dialogic OKI ADPCM, YAMAHA ADPCM, Adobe SWF ADPCM
Wavpack	`.wv`	

Note: Free Lossless Audio multichannel tracks may not play in realtime on all devices due to CPU performance requirements.

B.1.3. Other Codecs

Format	Extension	Notes
Atari Sound Format	.cmc, .cm3, .cmr, .cms, .dmc, .dlt, .mpt, .mpd	
Synthetic music Mobile Application Format	.mmf	PCM/ADPCM only
Game Boy Sound Format	.gbs	Progress bar and seek use subtracks instead of seconds.
AY Sound Chip Music	.ay	Progress bar and seek use subtracks instead of seconds for multitrack files.
Hudson Entertainment System Sound Format	.hes	Progress bar and seek use subtracks instead of seconds.
MSX Konami Sound System	.kss	Progress bar and seek use subtracks instead of seconds.
SMS/GG/CV Sound Format	.sgc	Supports Sega Master System and Game Gear Sound Format. Progress bar and seek use subtracks instead of seconds.
Video Game Music Format	.vgm	
Gzipped Video Game Music Format	.vgz	
MOD	.mod	
NES Sound Format	.nsf, .nsfe	Progress bar and seek use subtracks instead of seconds.
Atari SAP	.sap	
Sound Interface Device	.sid	Progress bar and seek use subtracks instead of seconds.
SPC700	.spc	

Note: NSF and VGM might not play in realtime on all devices due to CPU performance requirements.

B.1.4. Codec featureset

Format	Seek	Resume	Gapless
ATSC A/52 (AC3)	x	x	
ADX	x		
Advanced Audio Coding	x	x	x
MPEG audio	x	x	x
Musepack	x	x	x
OGG/Vorbis	x	x	x
Sony Audio	x	x	
RealAudio	x	x	
Dialogic telephony type	x	x	
Windows Media Audio Standard	x	x	
Windows Media Audio Professional	x	x	
Audio Interchange File Format	x	x	x
Monkey's Audio	x	x	x
Sun Audio	x	x	x
Free Lossless Audio	x	x	x
Apple Lossless	x	x	x
Shorten			x
True Audio	x	x	x
Wave64	x	x	x
Waveform audio format	x	x	x
Wavpack	x	x	x
Atari Sound Format	x		
Synthetic music Mobile Application Format	x	x	
Game Boy Sound Format	x		
AY Sound Chip Music	x		
Hudson Entertainment System Sound Format	x		
MSX Konami Sound System	x		
SMS/GG/CV Sound Format	x		
Video Game Music Format	x	x	
Gzipped Video Game Music Format	x	x	
MOD	x		
NES Sound Format	x		
Atari SAP	x		
Sound Interface Device	x		
SPC700	x		

Note: The seek implementations of NES Sound Format, Sound Interface Device, Game Boy Sound Format, AY Sound Chip Music, Hudson Entertainment System Sound, Format, MSX Konami Sound System and SMS/GG/CV Sound Format use subtracks instead of seconds, whereas each subtrack equals a second.

B.2. Supported metadata tags

Rockbox supports different metadata formats. In general those tag formats are ID3 (v1.0, v1.1, v2.2, v2.3 and v2.4), APE (v1 and v2), Vorbis, MP4 and ASF. Few codecs use codec specific tags, several codecs do not use any tags yet. The following table gives an overview about what tag types rockbox supports for which audio file extension.

Note: There is always only *one* tag type supported for each file extension.

Tag type	File extension
ID3	`.mp1`, `.mpa`, `.mp2`, `.mp3`, `.rm`, `.ra`, `.rmvb`, `.tta`
APE	`.mpc`, `.ape`, `.mac`, `.wv`
Vorbis	`.ogg`, `.oga`, `.spx`, `.flac`
MP4	`.m4a`, `.m4b`, `.mp4`
ASF	`.wma`, `.wmv`, `.asf`
Codec specific	`.mmf`, `.mod`, `.nsf`, `.nsfe`, `.sap`, `.sid`, `.spc`, `.gbs`, `.ay`, `.kss`, `.sgc`, `.vgm`
None	`.a52`, `.ac3`, `.adx`, `.oma`, `.aa3`, `.aif`, `.aiff`, `.au`, `.snd`, `.shn`, `.vox`, `.w64`, `.wav`, `.cmc`, `.cm3`, `.cmr`, `.cms`, `.dmc`, `.dlt`, `.mpt`, `.mpd`, `.hes`, `.vgz`

B.2.1. Featureset for generic metadata tags

Feature	ID3	APE	Vorbis	MP4	ASF
Embedded albumart `.bmp`					
Embedded albumart `.jpg`	x	x		x	x
Embedded albumart `.png`					
Embedded cuesheet	x		x		
Replaygain information	x	x	x	x	x
Title (string)	x	x	x	x	x
Artist (string)	x	x	x	x	x
Album (string)	x	x	x	x	x
Genre (string)	x	x	x	x	x
Disc (string or number)	x	x	x	x	
Track (string or number)	x	x	x	x	x
Year (string or number)	x	x	x	x	x
Composer (string)		x	x	x	x
Comment (string)	x	x	x	x	x
Albumartist (string)	x	x	x	x	x
Grouping (string)		x	x	x	

Note: Embedded album art for ASF is limited to pictures of maximum 64 KB size.

B.2.2. Featureset for codec specific metadata

Feature	Codec specific metadata (file extension)
Embedded `.bmp`	None
Embedded `.jpg`	None
Embedded `.png`	None
Replaygain	`.mpc`
Title	`.tta`, `.spc`, `.mmf`, `.sid`, `.rm`, `.ra`, `.rmvb`, `.nsf`, `.nsfe`, `.mod`, `.sap`, `.gbs`, `.ay`, `.sgc`, `.vgm`
Artist	`.tta`, `.spc`, `.mmf`, `.sid`, `.rm`, `.ra`, `.rmvb`, `.nsf`, `.nsfe`, `.sap`, `.gbs`, `.ay`, `.sgc`, `.vgm`
Album	`.spc`, `.sid`, `.nsf`, `.nsfe`, `.gbs`, `.ay`, `.sgc`, `.vgm`
Genre	`.tta`, `.spc`, `.sap`
Disc	`.tta`
Track	`.tta`
Year	`.spc`, `.sid`, `.sap`
Composer	`.mmf`
Comment	`.spc`, `.rm`, `.ra`, `.rmvb`, `.vgm`
Albumartist	None
Grouping	None

B.2.3. Limitations of metadata handling

1. Multiple tags (e.g. for Genre) are not supported. The first tag item of a set of multiple tags is used.
2. Only one tag type is supported for each audio format.
3. Overall there are 900 bytes available to load metadata strings.
4. The maximum size of each metadata item (e.g. Artists) is limited to 240 bytes.

C. Album Art

Rockbox allows you to put the album art, or another image related to the music on your player to display it in the PictureFlow plugin or in the theme. For this feature to work, there are a few requirements.

C.1. Limitations

Rockbox supports embedded album art only for some specific formats, see section B.2.1 (page 169) for full details. It additionally supports loading images located on the hard disk. PictureFlow is currently unable to use embedded album art. The image files must be in either BMP or JPEG format, while embedded album art is currently limited to JPEG. Embedded JPEG images must not be unsynchronized. Rockbox does not support RLE-compressed BMP files, nor does it support progressive and multi-scan JPEG files. JPEG files must consist of a single scan with interleaved components, as progessive and multi-scan images require much more memory to decode.

C.2. Where to put album art

The pictures can be named a number of different ways, and placed to a number of different locations. You can have pictures specific to the file or the album or use a generic picture. You can place the picture in the same directory as the file, in the parent directory or in a fixed directory named `/.rockbox/albumart/`. The order Rockbox uses when looking for a picture is as follows (a list in braces means that those file extensions are tried in that order):

1. embedded (JPEG images in ID3v2 or MP4 tags only)
2. `./filename.{jpeg,jpg,bmp}`
3. `./albumtitle.{jpeg,jpg,bmp}`
4. `./cover.{jpeg,jpg,bmp}`
5. `./folder.jpg`
6. `/.rockbox/albumart/albumartist-albumtitle.{jpeg,jpg,bmp}`
7. `../albumtitle.{jpeg,jpg,bmp}`
8. `../cover.{jpeg,jpg,bmp}`

The following characters will be replaced with an underscore (_) when looking for albumtitle.bmp or albumartist-albumtitle.bmp: \ / : < > ? * |. Doublequotes will be replaced by single quotes. If no album artist is set, artist will be used instead. See ☞AlbumArt in the wiki for programs that will help you automate the process of putting album art on your player.

D. Theme Tags

Themeing is discussed in detail in section section 13.2 (page 154), what follows is a list of the available tags.

Note: The "bar-type tags" (such as %pb, %pv, %bl etc.) can be further themed – see section D.28 (page 187).

D.1. Status Bar

Tag	Description
%we	Display Status Bar
%wd	Hide Status Bar
%wi	Display the inbuilt Status Bar in the current viewport

These tags override the player setting for the display of the status bar. They must be noted on their own line (which will not be shown in the WPS).

D.2. Hardware Capabilities

Tag	Description
%cc	Check for presence of a real time clock, returns "c" when used unconditionally
%tp	Does this target have a radio?
%Tp	Indicates that the target has a touchscreen

With the above tags it is possible to find out about the presence of certain hardware and make the theme adapt to it. This can be very useful for designing a theme that works on multiple targets with differing hardware capabilities, e.g. targets that do and do not have a clock. When used conditionally, the "true" branch is completely ignored if it does not apply.

Example: `%?cc<%cH:%cM|No clock detected>`

D.3. Information from the track tags

Tag	Description
%ia	Artist
%ic	Composer
%iA	Album Artist
%id	Album Name
%iG	Grouping
%ig	Genre Name
%in	Track Number
%it	Track Title
%iC	Comment
%iv	ID3 version (1.0, 1.1, 2.2, 2.3, 2.4, or empty if not an ID3 tag)
%iy	Year
%ik	Disc Number

Remember that this information is not always available, so use the conditionals to show alternate information in preference to assuming.

These tags, when written with a capital "I" (e.g. %Ia or %Ic), show the information for the next song to be played.

D.4. Viewports

Tag	Description
%V(x,y,[width],[height],[font]) %Vf([fgshade]) %Vb([bgshade])	See section 13.2.2
%Vs(mode[,param])	See section 13.2.2
%Vl('identifier',...)	Preloads a viewport for later display. 'identifier' is a single lowercase letter (a-z) and the '...' parameters use the same logic as the %V tag explained above.
%Vd('identifier')	Display the 'identifier' viewport. E.g. %?C<%Vd(a)|%Vd(b)> will show viewport 'a' if album art is found, and 'b' if it isn't.
%Vi('label',...)	Declare a Custom UI Viewport. The '...' parameters use the same logic as the %V tag explained above. See section 13.2.2.
%VI('label')	Set the Info Viewport to use the viewport called label, as declared with the previous tag.
%VB	Draw this viewport on the backdrop layer.

D.5. Additional Fonts

Tag	Description
%Fl('id',filename)	See section 13.2.4.

D.6. Misc Coloring Tags

Tag	Description
%dr(x,y,width,heigh	Color a rectangle.

width and height can be - to fill the viewport. If no color is specified the viewports foreground color will be used. If two colors are specified it will do a gradient fill.

D.7. Power Related Information

Tag	Description
%bl	Numeric battery level in percents. Can also be used in a conditional: %?bl<-1|0|1|2|...|N>, where the value −1 is used when the battery level isn't known (it usually is). The value N is only used when the battery level is exactly 100 percent. An image can also be used, the proportion of the image shown corresponds to the battery level: %bl(x,y,[width],[height],image.bmp)
%bv	The battery level in volts
%bt	Estimated battery time left
%bp	"p" if the charger is connected (only on targets that can charge batteries)
%bc	"c" if the unit is currently charging the battery (only on targets that have software charge control or monitoring)
%bs	Remaining time of the sleep timer (if it is set)

D.8. Information about the file

Tag	Description
%fb	File Bitrate (in kbps)
%fc	File Codec (e.g. "MP3" or "FLAC"). This tag can also be used in a conditional tag: %?fc<mp1|mp2|mp3|aiff|wav|ogg|flac|mpcsv7|a52|wavpack|alac|aac|shn|sid|adx|nsf|speex|spc|ape|wma|wmapro|mod|sap|realaudiocook|realaudioaac|realaudioac3|realaudioatrac3|cmc|cm3|cmr|cms|dmc|dlt|mpt|mpd|rmt|tmc|tm8|tm2|omaatrac3|smaf|au|vox|wave64|tta|wmavoice|mpcsv8|aache|ay|gbs|hes|sgc|vgm|kss|unknown>. The codec order is as shown above.
%ff	File Frequency (in Hz)
%fk	File Frequency (in kHz)
%fm	File Name
%fn	File Name (without extension)
%fp	File Path
%fs	File Size (in Kilobytes)
%fv	"(avg)" if variable bit rate or empty string if constant bit rate
%d(N)	N-th segment from the end of the file's directory (N can be 1, 2, 3, ...)

Example for the %d(N) commands: If the file is "/Rock/Kent/Isola/11 - 747.mp3", %d(1) is "Isola", %d(2) is "Kent" and %d(3) is "Rock".

These tags, when written with the first letter capitalized (e.g. %Fn or %D(2)), produce the information for the next file to be played.

D.9. Playlist/Song Info

Tag	Description
%pb	Progress Bar. This will replace the entire line with a progress bar. You can set the position, width and height of the progressbar (in pixels) and load a custom image for it: %pb(x,y,[width],[height],image.bmp)
%px	Percentage played in song
%pc	Current time in song
%pe	Total number of playlist entries
%pm	Peak Meter. The entire line is used as volume peak meter.
%pL	Peak meter for the left channel. Can be used as a value, a conditional tag or a bar tag.
%pR	Peak meter for the right channel. Can be used as a value, a conditional tag or a bar tag.
%pn	Playlist name (without path or extension)
%pp	Playlist position
%pr	Remaining time in song
%ps	"s" if shuffle mode is enabled
%pt	Total track time
%pv	Current volume (in dB). Can also be used in a conditional: %?pv<Mute|...|0 dB|Above 0 dB> Mute is 0% volume, ... is the values between Mute and max, 0 dB is max volume, and Above 0 dB is amplified volume This can also be used like %pb to provide a continuous scale: %pv(x,y,[width],[height],image.bmp)
%pS	Track is starting. An optional number gives how many seconds the tag remains true for after the start of the track. The default is 10 seconds if no number is specified. %?pS(7)<in the first 7 seconds of track|in the rest of the track>
%pE	Track is ending. An optional number gives how many seconds before the end of the track the tag becomes true. The default is 10 seconds if no number is specified. %?pE(7)<in the last 7 seconds of track|in the rest of the track>
%Sp	Current playback pitch

D.10. Playlist Viewer

Tag	Description
%Vp(start,code to render)	Display the playlist viewer in the current viewport.

- 'start' is the offset relative to the currently playing track for the playlist to display from (0 the current track, 1 is the next track, etc.).
- 'code to render' is a line of skin code which will be displayed for each line in the viewer. All text tags are supported (including conditionals and sublines)

The entire viewport will be used, so don't expect other tags in the same viewport to work well. Supported tags are %pp, all tags starting with %i, most tags starting with %f, %pt and %s.

Example: `%Vp(1,%pp - %it,%pp - %fn)` – Display the playlist position, then either the track title (from the tags) or the filename. The viewer will display as many tracks as will fit in the viewport.

D.11. Runtime Database

Tag	Description
`%rp`	Song playcount
`%rr`	Song rating (0-10). This tag can also be used in a conditional tag: `%?rr<0|1|2|3|4|5|6|7|8|9|10>`
`%ra`	Autoscore for the song

D.12. Sound (DSP) settings

Tag	Description
`%Sp`	Current playback pitch
`%xf`	Crossfade setting, in the order: Off, Auto Skip, Man Skip, Shuffle, Shuffle and Man Skip, Always
`%rg`	ReplayGain value in use (x.y dB). If used as a conditional, Replaygain type in use: `%?rg<Off|Track|Album|TrackShuffle|AlbumShuffle|No tag>`

D.13. Hold

Tag	Description
`%mh`	"h" if the main unit keys are locked

D.14. Virtual LED

Tag	Description
%lh	"h" if the hard disk is accessed

D.15. Repeat Mode

Tag	Description
%mm	Repeat mode, 0-4, in the order: Off, All, One, Shuffle, A-B

Example: %?mm<Off|All|One|Shuffle|A-B>

D.16. Playback Mode

Tag	Description
%mp	Play status, 0-4, in the order: Stop, Play, Pause, Fast Forward, Rewind, Recording, Recording paused, FM Radio playing, FM Radio muted

Example: %?mp<Stop|Play|Pause|Ffwd|Rew|Rec|Rec pause|FM|FM pause>

D.17. Current Screen

Tag	Description
%cs	The current screen, 1-20, in the order shown below

Number	Screen
1	Menus
2	WPS
3	Recording screen
4	FM Radio screen
5	Current Playlist screen
6	Settings menus
7	File browser
8	Database browser
9	Plugin browser
10	Quickscreen
11	Pitchscreen
12	Setting chooser
13	Playlist Catalogue Viewer
14	Plugin
15	Context menu
16	System Info screen
17	Time and Date Screen
18	Bookmark browser
19	Shortcuts menu
20	Track Info screen

The tag can also be used as the switch in a conditional tag. For players without certain capabilities (e.g. no FM radio) some values will never be returned.

Examples:

```
You are in the %?cs<Main menu|WPS|Recording screen|FM Radio screen>
%?if(%cs, =, 2)<This is the WPS>
```

D.18. List Title (`.sbs` only)

Tag	Description
`%Lt`	Title text. Should be used in a conditional so that non-list screens don't show a title when they shouldn't
`%Li`	Title icon. This uses the same order as custom icons (see ☞CustomIcons in the wiki) except that here `0` is "no icon"

This tag can be used to give custom formatting to list titles. Define a viewport with the font and formatting desired, and then use `%?Lt<%Lt>` to display the title within the viewport. If `%Lt` is present anywhere in the `.sbs`, then the `%Vi` viewport will not show the title.

D.19. Changing Volume

Tag	Description
%mv(t)	"v" if the volume is being changed

The tag produces the letter "v" while the volume is being changed and some amount of time after that, i.e. after the volume button has been released. The optional parameter `t` specifies that amount of time, in seconds. If it is not specified, 1 second is assumed.

The tag can be used as the switch in a conditional tag to display different things depending on whether the volume is being changed. It can produce neat effects when used with conditional viewports.

Example: `%?mv(2.5)<Volume changing|%pv>`

The example above will display the text "Volume changing" if the volume is being changed and 2.5 seconds after the volume button has been released. After that, it will display the volume value.

D.20. Settings

Tag	Description
%St(<setting name>)	The value of the Rockbox setting with the specified name. See section E (page 190) for the list of the available settings.
%St(...)	Draw a bar using from the setting. See section D.28 (page 187) for details.

Examples:

1. As a simple tag: `%St(skip length)`
2. As a conditional: `%?St(eq enabled)<Eq is enabled|Eq is disabled>`

D.21. Images

Tag	Description
%X(filename.bmp)	Load and set a backdrop image for the WPS. This image must be exactly the same size as your LCD.
%x(n,filename[,x,y]	Load and display an image n: image ID for later referencing in %xd filename: file name relative to /.rockbox/ and including ".bmp" x: x coordinate (defaults to 0 if both x and y are not specified) y: y coordinate. (defaults to 0 if both x and y are not specified)
%xl(n,filename,[x,y [nimages])	Preload an image for later display (useful for when your images are displayed conditionally). n: image ID for later referencing in %xd filename: file name relative to /.rockbox/ and including ".bmp" If the filename is "___list_icons___" the list icon bitmap will be used instead x: x coordinate (defaults to 0 if both x and y are not specified) y: y coordinate. (defaults to 0 if both x and y are not specified) nimages: (optional) number of sub-images (tiled vertically, of the same height) contained in the bitmap. Default is 1.
%xd(n[i] [,tag] [,offset])	Display a preloaded image. n: image ID as it was specified in %x or %xl i: (optional) number of the sub-image to display (a-z for 1-26 and A-Z for 27-52). (ignored when tag is used). Only useable if the ID is a single letter. By default the first (i.e. top most) sub-image will be used. tag: (optional) Another tag to calculate the subimage from e.g %xd(A, %mh) would use the first subimage when %mh is on and the second when it is off offset: (optional) Add this number to the value from the tag when chosing the subimage (may be negative)
%x9(n)	Display an image as a 9-patch bitmap covering the entire viewport. 9-patch images are bitmaps split into 9 segments where the four corners are unscaled, the four middle sections are scaled along one axis and the middle section is scaled on both axis. n: image ID

Examples:

1. Load and display the image `/.rockbox/bg.bmp` with ID "a" at 37, 109:
   `%x(a,bg.bmp,37,109)`
2. Load a bitmap strip containing 5 volume icon images (all the same size) with image ID "M", and then reference the individual sub-images in a conditional:
   `%xl(M,volume.bmp,134,153,5)`
   `%?pv<%xd(Ma)|%xd(Mb)|%xd(Mc)|%xd(Md)|%xd(Me)>`

Note:

- The images must be in BMP format
- The image tag must be on its own line
- The ID is case sensitive
- The size of the LCD screen for each player varies. See table below for appropriate sizes of each device. The x and y coordinates must respect each of the player's limits.

D.21.1. How to display the album art

Once the album art files are present on your player, they can be displayed as follows.

Tag	Description
`%Cl(x,y,[maxwidth], [maxheight], hor_align, vert_align)`	Define the settings for album art `x`: x coordinate `y`: y coordinate `maxwidth`: Maximum height `maxheight`: Maximum width `hor_align`: Horizontal alignment, enter as 'l', 'c' or 'r' for left, centre or right. Centre is default `vert_align`: Vertical alignment, enter as 't', 'c' or 'b' for top, centre or bottom. Centre is default
`%Cd`	Display the album art as configured.
`%C`	Use in a conditional to determine if an image is available.

The picture will be rescaled, preserving aspect ratio to fit the given `maxwidth` and `maxheight`. If the aspect ratio doesn't match the configured values, the picture will be placed according to the alignment flags.

Examples:

1. Load albumart at position 20,40 and display it without resizing:
   `%Cl(20,40,,)`

2. Load albumart at position 0,20 and resize it to be at most 100×100 pixels. If the image isn't square, align it to the bottom-right corner:
   `%Cl(0,20,100,100,r,b)`

For general information where to put album art see section C (page 171).

D.22. FM Radio

Tag	Description
`%tt`	Is the tuner tuned?
`%tm`	Scan or preset mode? Scan is "true", preset is "false".
`%ts`	Is the station in stereo?
`%ta`	Minimum frequency (region specific) in MHz.
`%tb`	Maximum frequency (region specific) in MHz.
`%tf`	Current frequency in MHz.
`%Ti`	Current preset id, i.e. 1-based number of the preset within the presets list (usable in playlist viewer).
`%Tn`	Current preset name (usable in playlist viewer).
`%Tf`	Current preset frequency (usable in playlist viewer).
`%Tc`	Preset count, i.e. the number of stations in the current preset list.
`%tx`	Is RDS available?
`%ty`	RDS name.
`%tz`	RDS text.
`%tr`	Signal strength (RSSI). Can be used in a conditional or as a bar.

It is also possible to show "Radio Art" which can be used to display images associated with presets. The tags are exactly the same as for album art, described above. Images need to be placed in `/.rockbox/fmpresets/`, and must have the same name as the preset. They need to be in either `.bmp` or `.jpg` format, and the radio must be in preset mode and tuned to a preset (and not recording) in order for them to be shown.

D.23. Alignment and language direction

Tag	Description
%al	Align the text left
%aL	Align the text left, or to the right if RTL language is in use
%ac	Centre the text
%ar	Align the text right
%aR	Align the text right, or to the left if RTL language is in use
%ax	The next tag should follow the set language direction. When prepended to a viewport declaration, the viewport will be horizontally mirrored if the user language is set to a RTL language. Currently the %Cl, %V and %Vl tags support this.
%Sr	Use as a conditional to define options for left to right, or right to left languages. %?Sr<RTL|LTR>

All alignment tags may be present in one line, but they need to be in the order left – centre – right. If the aligned texts overlap, they are merged.

Example: %ax%V(...)

D.24. Conditional Tags

Tag	Description
%?xx<true|false>	If / Else: Evaluate for true or false case
%?xx<alt1|alt2| alt3|...|else>	Enumerations: Evaluate for first / second / third / ... / last condition
%if(tag, operator, operand, [option count])	Allows very simple comparisons with other tags. tag: the tag to check against. operator: the comparison to perform - possible options are =, !=, >, >=, <, <= operand: either a second tag, a number, or text. [option count]: optional parameter used to select which parameter of a tag to use when the tag has multiple options, e.g. %?pv<a|b|c|d>
%and(tag1, tag2, ..., tagN)	Logical "and" operator. Will be evaluate to true if all the tag parameters are true.
%or(tag1, tag2, ..., tagN)	Logical "or" operator. Will be evaluate to true if any of the tag parameters are true.

Examples of the %if tag:

`%?if(%pv, >=, 0)<Clipping possible|Volume OK>` will display "Clipping possible" if the volume is higher than or equal to 0 dB, "Volume OK" if it is lower.

`%?if(%ia, =, %Ia)<same artist>` – this artist and the next artist are the same.

Note: When performing a comparison against a string tag such as %ia, only = and != work, and the comparison is not case sensitive.

D.25. Subline Tags

Tag	Description
`%t(time)`	Set the subline display cycle time (%t(5) or %t(3.4) formats)
`;`	Split items on a line into separate sublines

Allows grouping of several items (sublines) onto one line, with the display cycling round the defined sublines. See section 13.2.4 (page 158) for details.

D.26. Time and Date

Tag	Description
`%cd`	Day of month from 01 to 31
`%ce`	Zero padded day of month from 1 to 31
`%cf`	A conditional for 12/24 hour format. `%?cf<24 hour stuff|12 hour stuff>`
`%cH`	Zero padded hour from 00 to 23 (24 hour format)
`%ck`	Hour from 0 to 23 (24 hour format)
`%cI`	Zero padded hour from 01 to 12 (am/pm format)
`%cl`	Hour from 1 to 12 (am/pm format)
`%cm`	Month from 01 to 12
`%cM`	Minutes
`%cS`	Seconds
`%cy`	2-digit year
`%cY`	4-digit year
`%cP`	Capital AM/PM
`%cp`	Lowercase am/pm
`%ca`	Weekday name
`%cb`	Month name
`%cu`	Day of week from 1 to 7, 1 is Monday
`%cw`	Day of week from 0 to 6, 0 is Sunday

D.27. Text Translation

Tag	Description
`%Sx(English)`	Display the translation of "English" in the current language

- "English" must be a phrase used in the language file.
- It should match the `Source:` line in the language file.

Note: checkwps cannot verify that the string is correct, so please check on either the simulator or on target.

D.28. Bar Tags

Some tags can be used to display a bar which draws according to the value of the tag. To use these tags like a bar you need to use the following parameters (%XX should be replaced with the actual tag).

Tag	Description
`%XX(x, y, width, height, [options])`	Draw the specified tag as a bar `x`: x co-ordinate at which to start drawing the bar. `y`: y co-ordinate at which to start drawing the bar. `width`: width of the bar (- for the full viewport width). `height`: height of the bar (- to set to the font height for horizontal bars and to the viewport height for vertical bars). `options`: any of the options set out below.

D.28.1. Options

image – the next option is either the filename or image label to use for the fill image.

horizontal – force the bar to be drawn horizontally.

vertical – force the bar to be drawn vertically.

invert – invert the draw direction (i.e. right to left, or top to bottom).

slider – draw a preloaded image over the top of the bar so that the centre of the image matches the current position. This must be followed by the label of the desired image.

backdrop – draw a preloaded image under the bar. The full image will be displayed and must be the same size as the bar. This must be followed by the label of the desired image.

nofill – don't draw the bar, only its frame (for use with the "slider" option).

nobar – don't draw the bar or its frame (for use with the "slider" option).

setting – Specify the setting name to draw the bar from (bar must be %St type), the next param is the settings config name.

Example: `%pb(0,0,-,-,-,nofill, slider, slider_image, invert)` – draw a horizontal progressbar which doesn't fill and draws the image "slider_image" which moves right to left.

Note: If the slider option is used, the bar will be shrunk so that the slider fits inside the specified width and height. Example: A 100px bar image with a 16px slider image needs the bar to be 116px wide, and should be offset 8px left of the backdrop image to align correctly.

D.29. Other Tags

Tag	Description
`%ss(start, length, tag [,number]`	Get a substring from another tag.

Use this tag to get a substring from another tag.

start – first character to take (0 being the start of the string, negative means from the end of the string)

length – length of the substring to return (- for the rest of the string)

tag – tag to get

number – OPTIONAL. if this is present it will assume the substring is a number so it can be used with conditionals. (i.e `%cM`). 0 is the first conditional option

Tag	Description
%(	The character '('
%)	The character ')'
%,	The character ','
%%	The character '%'
%<	The character '<'
%|	The character '|'
%>	The character '>'
%;	The character ';'
%#	The character '#'
%s	Indicate that the line should scroll. Can occur anywhere in a line (given that the text is displayed; see conditionals above). You can specify up to ten scrolling lines. Scrolling lines can not contain dynamic content such as timers, peak meters or progress bars.

E. Config file options

Setting	Allowed Values	Unit
volume		dB
bass		dB
treble		dB
balance	-100 to +100	%
channels	stereo, mono, custom, mono left, mono right, karaoke	N/A
stereo_width	0 to 250	%
shuffle	on, off	N/A
repeat	off, all, one, shuffle, ab	N/A
play selected	on, off	N/A
party mode	on, off	N/A
scan min step	1, 2, 3, 4, 5, 6, 8, 10, 15, 20, 25, 30, 45, 60	s
seek acceleration	very fast, fast, normal, slow, very slow	N/A
antiskip	5s, 15s, 30s, 1min, 2min, 3min, 5min, 10min	N/A
volume fade	on, off	N/A
sort case	on, off	N/A
show files	all, supported, music, playlists	N/A
show filename exts	off, on, unknown, view_all	N/A
follow playlist	on, off	N/A
playlist viewer icons	on, off	N/A
playlist viewer indices	on, off	N/A
playlist viewer track display	track name,full path	N/A
recursive directory insert	on, off, ask	N/A
scroll speed	1 to 25	Hz
scroll delay	0 to 2500	ms
scroll step	**devise a way to get ranges from config-*.h**	pixels
screen scroll step	**devise a way to get ranges from config-*.h**	pixels
Screen Scrolls Out Of View	on, off	N/A

Setting	Allowed Values	Unit
bidir limit	0 to 200	% screen
scroll paginated	on, off	N/A
hold_lr_for_scroll_in_list	on, off	N/A
show path in browser	off, current directory, full path	N/A
contrast	0 to 63	N/A
backlight timeout	off, on, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 45, 60, 90, 120	s
backlight timeout plugged	off, on, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 45, 60, 90, 120	s
backlight filters first keypress	on, off	N/A
backlight on button hold	normal, off, on	N/A
caption backlight	on, off	N/A
brightness	**devise a way to get ranges from config-*.h**	N/A
disk spindown	3 to 254	s
battery capacity	**devise a way to get ranges from config-*.h**	mAh
car adapter mode	on, off	N/A
idle poweroff	off, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 30, 45, 60	min
sleeptimer duration	5 to 300 (in steps of 5)	min
sleeptimer on startup	off, on	N/A
keypress restarts sleeptimer	off, on	N/A
max files in playlist	1000 - 32000	N/A
max files in dir	50 - 10000	N/A
lang	/path/filename.lng	N/A
wps	/path/filename.wps	N/A
autocreate bookmarks	off, on	N/A
autoload bookmarks	off, on	N/A
use most-recent-bookmarks	off, on	N/A
pause on headphone unplug	off, pause, pause and resume	N/A
rewind duration on pause	0 to 15	s
disable autoresume if phones not present	off, on	N/A
Last.fm Logging	off, on	N/A
talk dir	off, number, spell	N/A
talk dir clip	off, on	N/A
talk file	off, number, spell	N/A

Setting	Allowed Values	Unit
talk file clip	off, on	N/A
talk filetype	off, on	N/A
talk menu	off, on	N/A
Announce Battery Level	off, on	N/A
sort files	alpha, oldest, newest, type	N/A
sort dirs	alpha, oldest, newest	N/A
sort interpret number	digits, numbers	N/A
tagcache_autoupdate	on, off	N/A
warn when erasing dynamic playlist	on, off	N/A
cuesheet support	on, off	N/A
folder navigation	off, on, random	N/A
constrain next folder	off, on	N/A
gather runtime data	off, on	N/A
skip length	outro, track, 1s, 2s, 3s, 5s, 7s, 10s, 15s, 20s, 1min, 90s, 2min, 3min, 5min, 10min, 15min	N/A
prevent track skip	on, off	N/A
start in screen	previous, root, files, dB, wps, menu, recording, radio, bookmarks	N/A
playlist catalog directory	/path/to/dir	N/A
list_accel_start_delay	0 to 10	ms
list_accel_wait	1 to 10	s
replaygain type	track, album, track shuffle, off	N/A
replaygain noclip	on, off	N/A
replaygain preamp	-120 to 120	0.1 dB
crossfade	off, auto track change, man track skip, shuffle, shuffle or man track skip, always	N/A
crossfade fade in delay	0 to 7	s
crossfade fade out delay	0 to 7	s
crossfade fade in duration	0 to 15	s
crossfade fade out duration	0 to 15	s
crossfade fade out mode	crossfade, mix	N/A
crossfeed	on, off	N/A
crossfeed direct gain	0 to 60	0.1 dB
crossfeed cross gain	30 to 120	0.1 dB
crossfeed hf attenuation	60 to 240	0.1 dB
crossfeed hf cutoff	500 to 2000	Hz
eq enabled	on, off	N/A

Setting	Allowed Values	Unit
eq precut	0 to 240	0.1 dB
eq low shelf filter	cutoff (in Hz), q (0 to 64), gain (-240 to 240) eq peak filter 1	cutoff (in Hz), q (0 to 64), gain (-240 to 240)
eq peak filter 2	cutoff (in Hz), q (0 to 64), gain (-240 to 240) eq peak filter 3	cutoff (in Hz), q (0 to 64), gain (-240 to 240)
eq peak filter 4	cutoff (in Hz), q (0 to 64), gain (-240 to 240) eq peak filter 5	cutoff (in Hz), q (0 to 64), gain (-240 to 240)
eq peak filter 6	cutoff (in Hz), q (0 to 64), gain (-240 to 240) eq peak filter 7	cutoff (in Hz), q (0 to 64), gain (-240 to 240)
eq peak filter 8	cutoff (in Hz), q (0 to 64), gain (-240 to 240) eq high shelf filter	cutoff (in Hz), q (0 to 64), gain (-240 to 240 (0.1 dB))
dithering enabled	on, off	N/A
timestretch enabled	on, off	N/A
compressor threshold	0 to -24	-3 dB
compressor makeup gain	off, auto	N/A
compressor ratio	2:1, 4:1, 6:1, 10:1, limit	N/A
compressor knee	hard knee, soft knee	N/A
compressor release time	100 to 1000	100 ms
beep	off, weak, moderate, strong	N/A
keyclick	off, weak, moderate, strong	N/A
keyclick repeats	on, off	N/A
dircache	on, off	N/A
tagcache_ram	on, off	N/A
peak meter release	1 to 126	?
peak meter hold	off, 200ms, 300ms, 500ms, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 30, 1min	N/A
peak meter clip hold	on, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 45, 60, 90, 2min, 3min, 5min, 10min, 20min, 45min, 90min	N/A
peak meter busy	on, off	N/A
peak meter dbfs	on, off	on: dbfs, off: linear
peak meter min	0 to 89 (dB) or 0 to 100 (%)	dB or %
peak meter max	0 to 89 /(dB) or 0 to 100 (%)	dB or %
statusbar	off, top, bottom	N/A
scrollbar	off, left, right	N/A

Setting	Allowed Values	Unit
scrollbar width	3 to LCD width / 10 (**devise a way to get ranges from config-*.h**)	pixels
volume display	graphic, numeric	N/A
battery display	graphic, numeric	N/A
font	/path/filename.fnt	N/A
kbd	/path/filename.kbd	N/A
invert	on, off	N/A
flip display	on, off	N/A
selector type	pointer, bar (inverse)	N/A
show icons	on, off	N/A
iconset	/path/filename.bmp	N/A
viewers iconset	/path/filename.bmp	N/A
backdrop	/path/filename.bmp	N/A
time format	12hour, 24hour	N/A
rec quality	0 to 7	0: small size, 7: high quality
rec frequency	48, 44, 32, 24, 22, 16	kHz
rec source	mic, line, spdif	N/A
rec channels	mono, stereo	N/A
rec mic gain	0 to 15	N/A
rec left gain	0 to 15	N/A
rec right gain	0 to 15	N/A
editable recordings	off,on	N/A
rec timesplit	off, 0:05, 0:10, 0:15, 0:30, 1:00, 2:00, 4:00, 6:00, 8:00, 16:00, 24:00	h:mm
pre-recording time	off, 1 to 30	s
rec path	/path/to/dir	N/A
force fm mono	off, on	N/A

F. Menu Overview

include an overview of the menu structure here

G. User feedback

G.1. Bug reports

If you experience inappropriate performance from any supported feature, please file a bug report on our web page. Do not report missing features as bugs, instead file them as feature ideas (see below).

For open bug reports refer to http://www.rockbox.org/tracker/index.php?type=2

G.1.1. Rules for submitting new bug reports

1. Check that the bug has not already been reported
2. Always include the following information in your bug report:
   - Which exact player you have.
   - Which exact Rockbox version you are using (Menu → System → Rockbox Info → Version)
   - A step-by-step description of what you did and what happened
   - Whether the problem is repeatable or a one-time occurrence
   - All relevant data regarding the problem, such as playlists, MP3 files etc. (IMPORTANT!)

G.2. Feature ideas

To suggest an idea for a feature or to read those made by others, see http://forums.rockbox.org/index.php?board=49.0. Please keep in mind that this forum is for the discussion of feature ideas - they are not requests and there is no guarantee they will be acted upon.

G.2.1. Rules for submitting a new feature idea

1. Check that the feature has not already been suggested. Duplicates are really boring!
2. Check that the feature has not already been implemented. Download the latest current/daily build and/or search the mail list archive.
3. Check that the feature is possible to implement (see section G.2.2 (page 197)).

G.2.2. Features we will not implement

This is a list of Feature Requests we get repeatedly that we simply cannot do. View it as the opposite of a TODO!

- Interfacing with other USB devices (like cameras) or 2 player games over USB.
  The USB system demands that there is a master that talks to a slave. The player can only serve as a slave, as most other USB devices such as cameras can. Thus, without a master no communication between the slaves can take place. If that is not enough, we have no way of actually controlling the communication performed over USB since the USB circuit in the player is strictly made for disk-access and does not allow us to play with it the way we'd need for any good communication to work.

- Support other file systems than FAT32 (like NTFS or ext2 etc.).
  No. support for more file systems will just take away valuable ram for unnecessary features. You can partition your player fine, just make sure the first one is FAT32 and then make the other ones whatever file system you want. Just do not expect Rockbox to understand them.

- Add scandisk-like features.
  It would be a very slow operation that would drain the batteries and take a lot of useful ram for something that is much better and faster done when connected to a host computer.

- Alphabetical list skipping.
  Skipping around the lists by jumping letters (i.e skip all C's and go straight to the first D). This isn't feasible with the current list implementation, if you really want this you can get similar effects using the database (see section 4.2 (page 26)).

- Add support for non standard tag formats.
  APE tags in MP3 files has been rejected a few times already. Its not something we want.

- Implementing the ability to playback DRM files.
  Firstly, this would be extremely difficult to implement legally - Rockbox is not legal entity as such, and therefore is unable to enter into license agreements with providers of DRM technology. Secondly, Rockbox is open source, which would mean that any DRM technology we incorporated into our codebase would suddenly become visible to the whole world, completely defeating its purpose. Remember, DRM achieves part of its security through obscurity, and publishing the keys necessary to decrypt DRM'd media would essentially render it useless.

H. Credits

People that have contributed to the project, one way or another. Friends!

▶ Björn Stenberg ▶ Linus Nielsen Feltzing ▶ Andy Choi ▶ Andrew Jamieson ▶ Paul Suade ▶ Joachim Schiffer ▶ Daniel Stenberg ▶ Alan Korr ▶ Gary Czvitkovicz ▶ Stuart Martin ▶ Felix Arends ▶ Ulf Ralberg ▶ David Härdeman ▶ Thomas Saeys ▶ Grant Wier ▶ Julien Labruyére ▶ Nicolas Sauzede ▶ Robert Hak ▶ Dave Chapman ▶ Stefan Meyer ▶ Eric Linenberg ▶ Tom Cvitan ▶ Magnus Öman ▶ Jerome Kuptz ▶ Julien Boissinot ▶ Nuutti Kotivuori ▶ Heikki Hannikainen ▶ Hardeep Sidhu ▶ Markus Braun ▶ Justin Heiner ▶ Magnus Holmgren ▶ Bill Napier ▶ George Styles ▶ Mats Lidell ▶ Lee Marlow ▶ Nate Nystrom ▶ Nick Robinson ▶ Chad Lockwood ▶ John Pybus ▶ Uwe Freese ▶ Randy Wood ▶ Gregory Haerr ▶ Philipp Pertermann ▶ Gilles Roux ▶ Mark Hillebrand ▶ Damien Teney ▶ Andreas Zwirtes ▶ Kjell Ericson ▶ Jim Hagani ▶ Ludovic Lange ▶ Mike Holden ▶ Simon Elén ▶ Matthew P. OReilly ▶ Christian Schönberger ▶ Henrik Backe ▶ Craig Sather ▶ José Maria Garcia-Valdecasas Bernal ▶ Stevie Oh ▶ Jörg Hohensohn ▶ Dave Jones ▶ Thomas Paul Diffenbach ▶ Roland Kletzing ▶ Itai Shaked ▶ Keith Hubbard ▶ Benjamin Metzler ▶ Frederic Dang Ngoc ▶ Pierre Delore ▶ Huw Smith ▶ Garrett Derner ▶ Barry McIntosh ▶ Leslie Donaldson ▶ Lee Pilgrim ▶ Zakk Roberts ▶ Francois Boucher ▶ Matthias Wientapper ▶ Brent Coutts ▶ Jens Arnold ▶ Gerald Vanbaren ▶ Christi Scarborough ▶ Steve Cundari ▶ Mat Holton ▶ Jan Gajdos ▶ Antoine Cellerier ▶ Brian King ▶ Jiri Jurecek ▶ Jacob Erlbeck ▶ Jean-Philippe Bernardy ▶ Dave Hooper ▶ Jonas Häggqvist ▶ Thom Johansen ▶ Rinat Zakirov ▶ Manuel Dejonghe ▶ Marcoen Hirschberg ▶ Michiel van der Kolk ▶ Tony Motakis ▶ Andy Young ▶ Alexandre Bourget ▶ Richard S. La Charité III ▶ Christian Gmeiner ▶ Tomas Salfischberger ▶ Miika Pekkarinen ▶ Tapio Karppinen ▶ Richard Ottó O'Brien ▶ Luca Burelli ▶ Alessio Lenzi ▶ David Bryant ▶ Martin Arver ▶ Alexander Spyridakis ▶ Pedro Baltazar Vasconcelos ▶ Ray Lambert ▶ Dave Wiard ▶ Pieter Bos ▶ Konstantin Isakov ▶ Bryan Vandyke ▶ Hristo Kovachev ▶ Sander Sweers ▶ Antonius Hellman ▶ Ryan Jackson ▶ Per Holmäng ▶ Frederic Devernay ▶ José M. Fandiño ▶ Gadi Cohen ▶ Naftali Goldstein ▶ David Dent ▶ Frank Dischner ▶ Liberman Shachar ▶ Stephan Wezel ▶ Alyssa Milburn ▶ Kevin Ferrare ▶ Anton Oleynikov ▶ Mark Arigo ▶ Magnus Westerlund ▶ Jake Owen ▶ Mustapha Senhaji ▶ Adam Boot ▶ Jonathan Gordon ▶ Tat Tang ▶ Toshihiko Itoh ▶ David J. Song ▶ Jeong Taek In ▶ Anders Kagerin ▶ Peter D'Hoye ▶ Ben Basha ▶ Brandon Low ▶ Nathan

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